AD-A150 676 SINGLE PRICING FOR MAJOR ITEMS IN FMS (FOREIGN MILITARY SALES)(U) LOGISTICS STUDIES OFFICE (ARMY) FORT LEE VA U R POSKUS JAN 84 1/2

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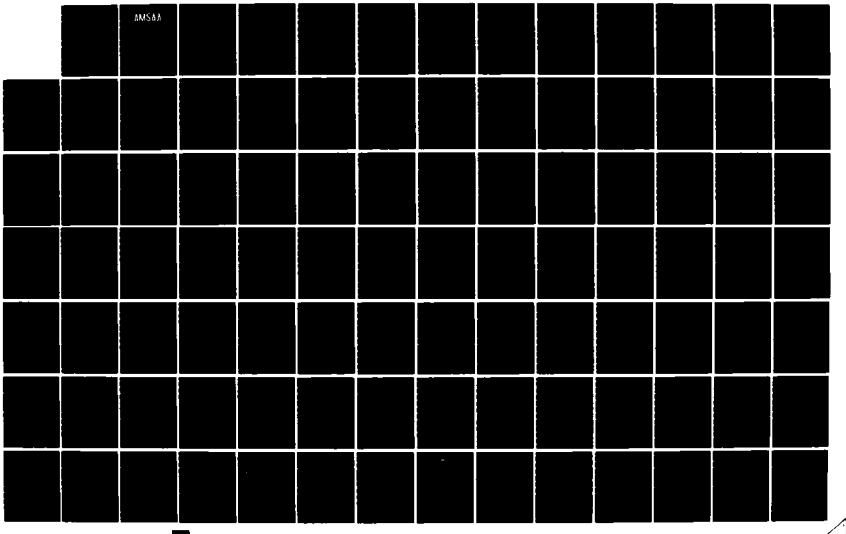

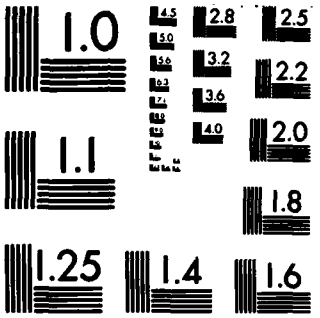

AMSAA

LOGISTICS STUDIES OFFICE

PROJECT NUMBER 004

FINAL REPORT

SINGLE PRICING FOR MAJOR ITEMS IN FMS

JANUARY 1984

U. S. ARMY MATERIEL SYSTEMS ANALYSIS ACTIVITY
LOGISTICS STUDIES OFFICE
FORT LEE, VIRGINIA 23801

DISCLAIMER

The views, opinions, and/or findings contained in this report are those of the author and should not be construed as an official Department of the Army position, policy, or decision, unless so designated by other documentation.

The word "he" is intended to include both the masculine and feminine genders; any exception to this will be so noted.

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19. KEY WORDS (Continue on reverse side if necessary and identify by block number)

FMS, Pricing, Cost, Major Items, Financial, Supply, Military Missions

20. ABSTRACT (Continue on reverse side if necessary and identify by block number)

This study has two primary objectives. First, to investigate how the existing methods of estimating major item prices for FMS could be improved so that the difference between that estimate and the actual price charged will not vary by more than 10% of the initial price. Second, to determine the initial versus final price differences currently being experienced by the Army. It was found that a few cost-effective improvements are possible though the average ratio of final prices to initial prices of between 93% and 99% is well within acceptable limits. The study recommends that the price estimating process be

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20. Abstract (continued)

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SINGLE PRICING FOR MAJOR ITEMS IN FMS

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Report Title: Single Pricing For Major Items in FMS.

Study Number: LSO 004.

Study Initiator and Sponsor: US Army Security Assistance Center
ATTN: DRSAC-MS
5001 Eisenhower Avenue
Alexandria, VA 22333

ACKNOWLEDGEMENTS

This study was performed under the direction of Mr. J. Allen Hill, Manager of the Logistics Studies Office (LSO), US Army Materiel Systems Analysis Activity (AMSAA). Mr. Eugene Flurie of the US Army Security Assistance Center (DRSAC-MS) was the study sponsor's representative.

A peer review of this report was conducted by Dr. Gerald Garfinkel and Mr. Richard Abeyta of LSO.

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TABLES AND FIGURES

EXECUTIVE SUMMARY

1. Authority For the Study. The authority for this study comes from a US Army Security Assistance Center (DRSAC-MS) study directive, undated, subject: LSO Study 004, Single Pricing For Major Items In FMS.

2. Problem/Background.

a. The United States Government (USG) sells billions of dollars of military equipment to foreign nations each year under the Foreign Military Sales (FMS) program. A preliminary to each potential sale is the process of establishing the availabilities and prices of the items that the foreign customer desires to purchase. Because there is no firm price list that can be used to establish the price, the customer is provided an estimate.

b. Primarily because of Government Accounting Office (GAO), Defense Audit Service (DAS)(now DOD IG), and Army Audit Agency (AAA) reports of audit, it is generally felt that the initial cost estimates are too low and of questionable accuracy.

c. If the price estimates for potential FMS offerings are too low at the time of case initiation, this results in a need to renegotiate the sale, customer dissatisfaction, a potential failure to recoup all the costs incurred by the USG in accordance with the Arms Export Control Act, and the potential for adverse foreign policy impacts.

3. Objectives.

a. The overall objective is to improve the current initial price estimating methods in order to decrease the likelihood of

the difference between the initial price estimate and the price at case close out from exceeding 10% of the initial price quote. Subobjectives are listed below.

(1) To evaluate methods and techniques used in pricing major items for FMS customers.

(2) To develop improvements to the existing pricing methodology such that the offered price will not require updating or renegotiation during the case execution time frame.

(3) To consider the concept of a management reserve to support a single fixed-price quote.

(4) To recommend appropriate pricing procedures in accordance with the goal (law) of FMS management to conduct the program at no cost to the USG.

(5) To develop a procedure to maintain visibility and awareness of price effects and price changes as the FMS case moves through its lead time.

b. During the course of the study it was found that, though price estimates were believed to be low and imprecise, no work had been done by any of the organizations involved in FMS to determine the extent of the problem and if in fact there was a problem. Snow and Izzi of this office (LSO) had done a brief analysis of costs in 1975 (Ref 1). The scope of the current study was consequently broadened to include an investigation of historic FMS case data to determine the magnitude of the disparity between the initially quoted price for major items on DD Form 1513 and the price that

was finally paid by the customer after the items were delivered. An in-depth discussion may be found in a later section (VI E).

4. Limits and Scope.

a. This study is unclassified.

b. Only major items are of interest in this study though statistics on cases and case lines for other than major items are provided. This study pertains to Army materiel managed by DARCOM with the following Commodity Management Codes (CMC):

B other support equipment, ground forces support materiel

C medical - dental materiel

H aircraft - air materiel

K tactical and support vehicles - combat and automotive materiel

L missiles - missile materiel

M ammunition, weapons and tracked combat vehicle's weapons, special weapons, chemical and fire control materiel

Cryptologic materiel (CMC P) and COMSEC materiel (CMC U) were not considered. Pricing evaluations include sales of non-excess major items whether delivered from storage, from procurements initiated to maintain "in kind" inventory levels, from procurements specifically for FMS, or from inventories to be replaced with improved items. The selling price of surplus major items was not evaluated nor was the adequacy of asset use, accessorial, or administrative "add-on" charges.

5. Assumptions. No assumptions were made.

6. Methodology.

a. The US Army Armament Materiel Readiness Command (ARRCOM), the USA Missile Command (MICOM), the USA Tank Automotive Command (TACOM), and the USA Troop Support and Aviation Materiel Readiness Command (TSARCOM) were visited to determine how initial estimates were established and to determine the types of problems experienced in estimating the initial prices. The USA Communications-Electronics Command (CECOM) was excluded at the sponsor's request.

b. The readiness commands listed above and the following commands were contacted for historic financial data on closed Army cases: USA Security Assistance Center (USASAC-O), New Cumberland Army Depot); USA Security Assistance Center (USASAC-M), HQ DARCOM; Security Assistance Accounting Center (SAAC), Denver, Colorado; and the Defense Security Assistance Agency (DSAA), the Pentagon.

7. Findings and Conclusions. The FMS prices estimated by the Major Subordinate Commands (MSCs) can and are being improved. There is a limit to the improvements that can be made to the estimating process under the existing regulatory and legal constraints. The following improvements, some of which are being implemented by individual readiness commands, will insure better estimates.

a. Automation of the estimating process will eliminate most of the mathematical errors that still occur and will standardize the process and increase the objectivity of the estimates. Management reports from the systems will provide visibility of cases as they are developed and executed.

b. Indexing is used as necessary in the estimating process. Historic indices, used to bring an old price up to date, appear to be adequate. However, The OSD inflation indices that the MSCs are mandated to use for price projections are not realistic. More realistic inflation indices should be developed and disseminated by HQ DARCOM.

c. The Special Defense Acquisition Fund (SDAF) will increase the responsiveness and improve price estimates on some of the foreign customer high demand items.

d. Price estimates could be improved if potential producers could be contacted legally for firm price estimates. The Army Procurement Pamphlet (APP) and Defense Acquisition Regulation (DAR) must be modified to accommodate this approach.

e. Quoting a fixed price to those customers who requested to do business in this way would insure accurate price estimates for these cases.

f. The management reserve concept has merit in those cases where the initial price estimate is known to have a high degree of uncertainty. The advantages of this concept for both the customer and the USG outweigh the disadvantages.

g. The analysis of recently closed cases indicates that in a majority of major item cases (over 60%) the final price is between 90% and 110% of the estimated price and that in over 85% of the cases the estimates are under 110% of the final price.

8. Recommendations.

a. The Foreign Military Sales process should be automated at all MSCs.

b. DARCOM seek approval to use inflation indices that are more realistic than the currently mandated Office of the Secretary of Defense indices.

c. The DAR must be amended to permit MSCs to solicit firm prices from contractors.

d. Customers should be given the option of a fixed price on the items they wish to purchase.

e. A management reserve should be used for those case lines where little or no historic pricing information is available.

f. USASAC-M be charged with preparing a quarterly performance report based on the ratio of final price to originally quoted price to keep abreast of MSC and total Army estimating performance.

MAIN REPORT

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B. The above readiness commands and the USA Security Assistance Center (USASAC-O), New Cumberland Army Depot; USA Security Assistance Center (USASAC-M), HQ DARCOM; Security Assistance Accounting Center (SAAC), Denver, Colorado; and the Defense Security Assistance Agency (DSAA), the Pentagon, were contacted for historic financial data on closed Army cases.

VI. Analysis and Discussion.

A. Background:

1. Security Assistance and Foreign Military Sales: When the United States Government provides military related goods and services to foreign countries, this is called Security Assistance (SA). The Defense Institute of Security Assistance Management (DISAM) (Ref 2) admits to the existence of a "definitional dilemma" in defining SA. Definitions exist but there appears to be no one accepted definition used consistently by all. The definition used in this report comes from the Joint Chiefs of Staff (JCS) publication, Department of Defense Dictionary of Military and Associated Terms (JCS Pub. 1). Security Assistance is a:

> "Group of programs authorized by the Foreign Assistance Act of 1961, as amended, and the Arms Export Control Act of 1976, as amended, or other related statutes by which the United States provides defense articles, military training, and other defense related services, by grant, credit or cash sales, in furtherance of national policies and objectives."

More specifically though, as will be outlined below, this report deals with the sale of military goods and services which is a subset of SA generally referred to as Foreign Military Sales. DISAM (Ref 2) defines Foreign Military Sales as:

> "That portion of United States security assistance authorized by the Foreign Assistance Act of 1961, as amended, and the Arms Export Control Act, as amended. This assistance differs from the Military Assistance Program and the International Military Education and Training Program in that the recipient provides reimbursement for defense articles and services transferred (JCS Pub 1). Includes cash sales from stocks (inventories, services, training) by the DOD; DOD guarantees covering financing by private or Federal Financing Bank sources of credit sales of defense articles and defense services."

FMS as a program of SA is an extension of the United States foreign policy objectives. If the United States Government is unable to meet commitments made by the Department of the Army (DA) to deliver materiel, or services at specified prices and times, this can reflect adversely on the image of the United States abroad and may cause severe policy impacts. Currently, the United States Government provides security assistance to over 75 sovereign nations though approximately 100 countries have been determined by the President to be eligible to participate in FMS.

2. Historic FMS:

a. Historically, the US was a recipient of Security Assistance (SA) during the American revolution when France furnished troops, ships, advisors, and money.

b. During the First and Second World Wars, USG aid to the allies was substantial. The Truman Doctrine (National Security Act of 1947) is generally accepted as the United States initial commitment to the principle of collective security and is recognized as the genesis of later and existing foreign assistance programs. SA is administered in support of foreign policy national security objectives of the United States.

3. The FMS Environment:

a. The environment in which FMS transactions take place is characterized by the following: continuing inflation which must be taken into account when price projections are made; congressional interest, best exemplified by the numerous audits performed to insure that all costs incurred by the United States Government (USG) in an FMS transaction are recovered; increasing sophistication in the weapons systems being developed; continued growth of the FMS program.

b. FMS is a tool of the nation's foreign policy and when carried out conscientiously can reap great benefits in the international arena. It has a very positive economic effect on employment and the national technology base yet it is often used as a political football by congress. In spite of the benefits, nationally there is a moral uneasiness that we are becoming the arsenal on the world.

4. Types of Foreign Military Sales:

a. The DSAA Military Assistance and Sales Manual (MASM) (Ref 3) defines Military Export Sales, also a subset of SA, as:

> "All sales of defense articles and defense services made from US sources to foreign governments, foreign private firms and international organizations, whether by DOD or by US industry directly to a foreign buyer. Such sales fall into two major categories, Foreign Military Sales and Commercial Sales."

Commercial sales are State Department sanctioned sales of items directly by the producer to the foreign customer. In Foreign Military Sales, the DA acts as the customer's agent. Only Foreign Military Sales are explored in this report.

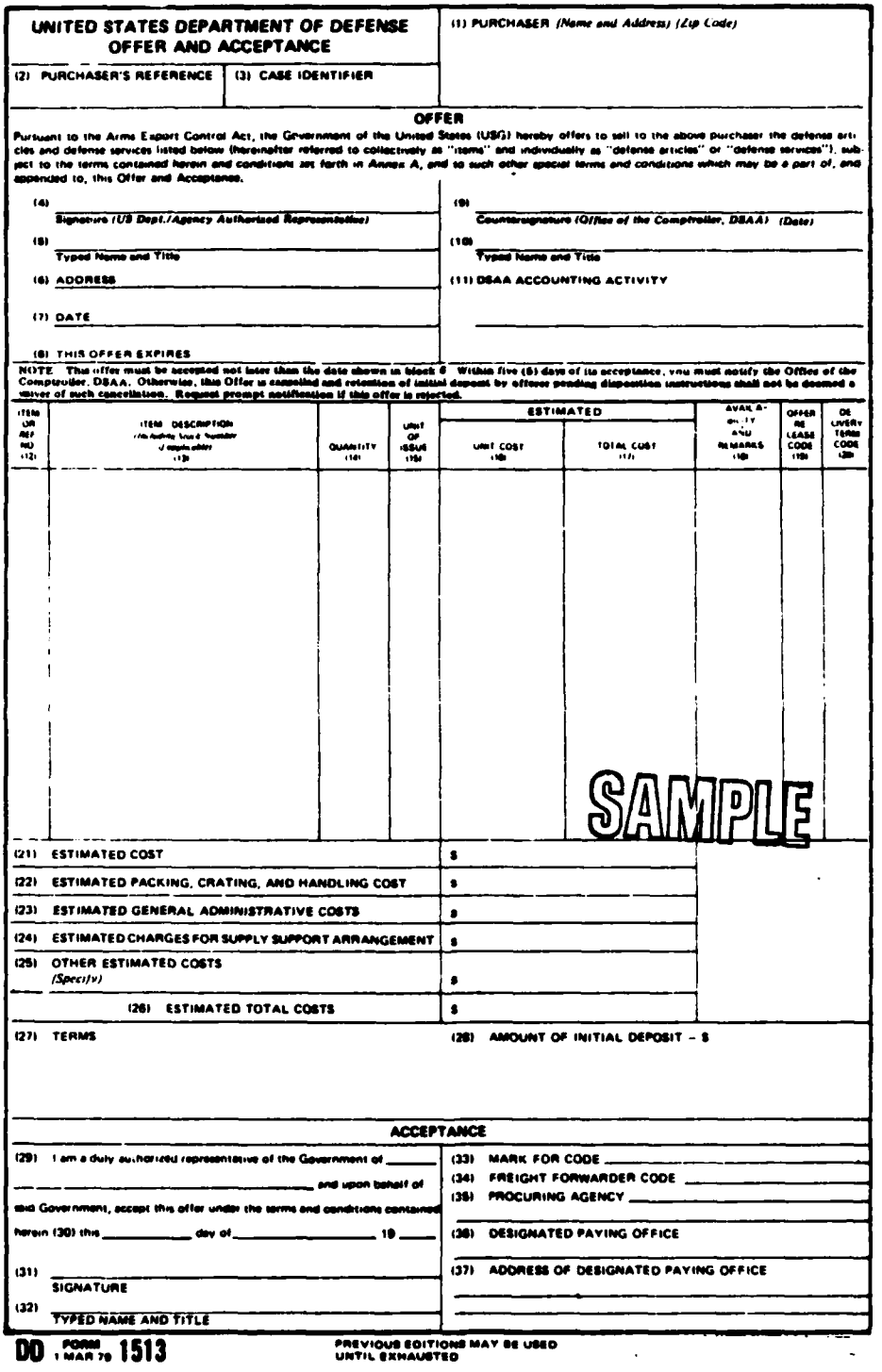
b. In an FMS transaction, the description of the goods or services and the paperwork and the administrative actions necessary to process the sale are called a case. Generally, cases involving Army equipment are developed, written, and implemented by elements of the US Army Materiel Development and Readiness Command (DARCOM). The implementation and execution of DARCOM's FMS responsibilities are coordinated by the US Army Security Assistance Center (USASAC).

c. USASAC Receives requirements for sales cases in two ways: through diplomatic channels or through direct contact authorized between USASAC and the customer country. When USASAC receives the customer's request for materiel, the case is assigned to one of the Major Subordinate Commands (MSC) within DARCOM. The MSC then prepares a Letter of Offer and Acceptance, Department of Defense Form 1513. The price estimate that is entered on the DD Form 1513 is the subject of this report.

5. DD Form 1513: Department of Defense Form 1513, United States Department of Defense Offer and Acceptance, is a dual purpose document which serves as an offer, by the United States government to sell and, when signed by an FMS customer, it is an acceptance of the offer. The Letter of Offer (and Acceptance), abbreviated LOA, contains information of concern to the potential purchaser and includes the expiration date of the offer, data as to the availability and condition of the items offered, estimated total costs, terms of payment, and any appropriate special instructions. (FM 38-8, Chapter 19) (Ref 4). See Figure 1 for an example of DD Form 1513.

6. Development phase, Execution phase: The processing of a case can be broken down into a development phase followed by an execution phase. The Letter of Offer is prepared during the development phase and the execution phase begins after the customer accepts and signs the offer and lasts until all materiel has been delivered, monies paid, and the case has been closed out.

7. Time Factors: The preparation of a case is done at a DARCOM Major Subordinate Command (MSC). When a customer has identified his requirement and wants a price commitment from the USG, the request is forwarded from the customer's representative to DA for processing through USASAC. DA is allocated 60 days to respond to the request. The MSC normally has 53 days to prepare the LOA and return it to the US Army Security Assistance Center (USASAC) where it is reviewed. The LOA may go to higher headquarters or it may go directly to the customer from USASAC. After receipt of the LOA,



UNITED STATES DEPARTMENT OF DEFENSE
OFFER AND ACCEPTANCE

(1) PURCHASER *(Name and Address) (Zip Code)*

(2) PURCHASER'S REFERENCE | (3) CASE IDENTIFIER

OFFER

Pursuant to the Arms Export Control Act, the Government of the United States (USG) hereby offers to sell to the above purchaser the defense articles and defense services listed below (hereinafter referred to collectively as "items" and individually as "defense articles" or "defense services"), subject to the terms contained herein and conditions set forth in Annex A, and to such other special terms and conditions which may be a part of, and appended to, this Offer and Acceptance.

(4) _____
Signature *(US Dept./Agency Authorized Representative)*

(5) _____
Typed Name and Title

(6) ADDRESS _____

(7) DATE _____

(8) THIS OFFER EXPIRES _____

(9) _____
Countersignature *(Office of the Comptroller, DSAA)* *(Date)*

(10) _____
Typed Name and Title

(11) DSAA ACCOUNTING ACTIVITY _____

NOTE: This offer must be accepted not later than the date shown in block 8. Within five (5) days of its acceptance, you must notify the Office of the Comptroller, DSAA. Otherwise, this Offer is cancelled and retention of initial deposit by offerer pending disposition instructions shall not be deemed a waiver of such cancellation. Request prompt notification if this offer is rejected.

ITEM NO. (12)	ITEM DESCRIPTION (13)	QUANTITY (14)	UNIT OF ISSUE (15)	ESTIMATED UNIT COST (16)	ESTIMATED TOTAL COST (17)	AVAILABILITY AND REMARKS (18)	OFFER RELEASE CODE (19)	DELIVERY TERM CODE (20)

SAMPLE

(21)	ESTIMATED COST	$
(22)	ESTIMATED PACKING, CRATING, AND HANDLING COST	$
(23)	ESTIMATED GENERAL ADMINISTRATIVE COSTS	$
(24)	ESTIMATED CHARGES FOR SUPPLY SUPPORT ARRANGEMENT	$
(25)	OTHER ESTIMATED COSTS *(Specify)*	$
(26)	ESTIMATED TOTAL COSTS	$

(27) TERMS

(28) AMOUNT OF INITIAL DEPOSIT – $

ACCEPTANCE

(29) I am a duly authorized representative of the Government of _____ and upon behalf of _____ and Government, accept this offer under the terms and conditions contained herein (30) this _____ day of _____ 19 ____

(31) _____
SIGNATURE

(32) _____
TYPED NAME AND TITLE

(33) MARK FOR CODE _____

(34) FREIGHT FORWARDER CODE _____

(35) PROCURING AGENCY _____

(36) DESIGNATED PAYING OFFICE _____

(37) ADDRESS OF DESIGNATED PAYING OFFICE _____

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PREVIOUS EDITIONS MAY BE USED UNTIL EXHAUSTED

Figure 1. DD 1513, LETTER OF OFFER AND ACCEPTANCE

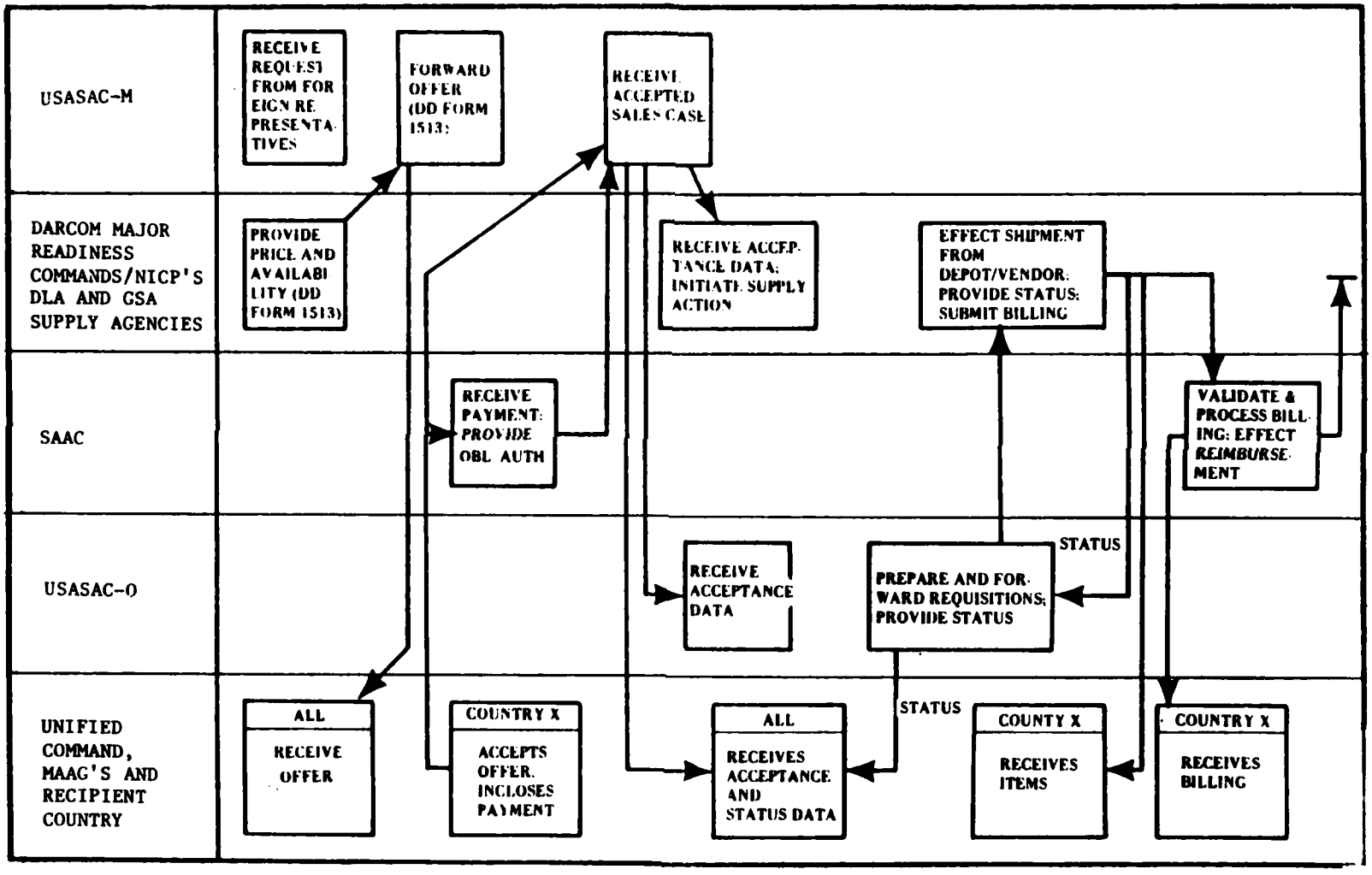
the customer has 120 days to accept it. Once signed (accepted), the LOA becomes a contract between the customer and the United States Government. Most sales cases for major items take from 2 to 3 years to complete, the development phase usually requiring 7 months of that time. See Figure 2 for the process flow.

8. Conditions of Sale: The general conditions covering the sale are in Annex A of DD Form 1513, see Figure 3. One very important clause is that which stipulates:

> "B. The purchaser:
> 1. Shall pay to the USG the total cost to the USG of the items, even if the final total cost exceeds the amounts estimated in this offer and acceptance."

When the customer signs the LOA, he agrees to pay whatever the final cost of the case will be. The price estimate on the LOA, therefore, must be the most accurate obtainable at the time. The customer country has to budget, appropriate, and obligate funds for the purchase and if the final price is considerably greater than the estimate, this can create problems in that the customer may not have the funds immediately available to pay the increase. The USG can be embarassed by having to ask for more money and additional manpower and time will be expended to collect the additional costs.

9. Changes to the LOA: Because of price or quantity changes, the LOA often needs to be changed. This can be done in three ways: by preparing a new LOA, by preparing an amendment to the LOA (DD Form 1513-1, Amendment to Offer and Acceptance) or by modifying the LOA (DD Form 1513-2, Notice of Modification of Offer and Acceptance). When possible, the preparation of a new LOA



Supply of Items Through Foreign Military Sales

Source: ALM-45-2268-RB(A) Security Assistance Reference Book

Figure 2. PROCESS FLOW

A. THE GOVERNMENT OF THE UNITED STATES:

1. Agrees to furnish such items from its Department of Defense (hereinafter referred to as "DOD") stocks and resources, or to procure them under terms and conditions consistent with DOD regulations and procedures. When procuring for the Purchaser, the DOD shall, in general employ the same contract clauses, the same contract administration, and the same inspection procedures as would be used in procuring for itself, except as otherwise requested by the Purchaser and as agreed to by the DOD. Unless the purchaser has requested that a sole source contractor be designated, and this Letter of Offer and Acceptance reflects acceptance of such designation by the DOD, the Purchaser understands that selection of the contractor source to fill this requirement is solely the responsibility of the Government of the United States (hereinafter referred to as "USG"). Further, the Purchaser agrees that the United States DoD is solely responsible for negotiating the terms and conditions of all contracts necessary to fulfill the requirements in the Letter of Offer.

2. Advises that when the DOD procures for itself, its contracts include warranty clauses only on an exceptional basis. However, the USG shall, with respect to items being procured, and upon timely notice, attempt to the extent possible to obtain any particular or special contract provisions and warranties desired by the Purchaser. The USG further agrees to exercise, upon the Purchaser's request, any rights (including those arising under any warranties) the USG may have under any contract connected with the procurement of any items. Any additional cost resulting from obtaining special contract provisions or warranties, or the exercise of rights under such provisions or warranties, or any other rights that the USG may have under any contract connected with the procurement of items, shall be charged to the Purchaser.

3.a. Shall, unless the condition is otherwise specified herein (e.g., "As is"), repair or replace at no extra cost defense articles supplied from DOD stocks which are damaged or found to be defective in respect of material or workmanship, when it is established that these deficiencies existed prior to passage of title, or found to be defective in design to such a degree that the items cannot be used at all for the purpose for which they were designed. Qualified representatives of the USG and of the Purchaser, upon notification pursuant to paragraph B.6. below, shall agree on the liability of the USG hereunder and the corrective steps to be taken.

b. With respect to items being procured for sale to the Purchaser, the USG agrees to exercise warranties on behalf of the Purchaser pursuant to A.2. above to assure, to the extent provided by the warranty, replacement or correction of such items found to be defective.

c. In addition, the USG warrants the title of all items sold to the Purchaser hereunder. The USG, however, makes no warranties other than those specifically set forth herein. In particular the USG disclaims any liability resulting from patent infringement occasioned by the use or manufacture by or for Purchaser outside the United States of items supplied hereunder.

4. Agrees to deliver and pass title to the items to the Purchaser at the initial point of shipment unless otherwise specified in this Offer and Acceptance. With respect to defense articles procured for sale to the Purchaser, this will normally be at the manufacturers' loading facilities; with respect to defense articles furnished from stocks, this will normally be at the U.S. depot. Articles will be packed, crated or otherwise prepared for shipment prior to the time title passes. If "Point of Delivery" is specified otherwise than the initial point of shipment, the supplying Military Department or Defense Agency will arrange movement of the items to the authorized delivery point as reimbursable services but will pass title at the initial point of shipment; the USG disclaims any liability for damage or loss to the items incurred after passage of title irrespective of whether transportation is by common carrier or by the U.S. Defense Transportation System.

5. Advises that a. Unless otherwise specified, USG standard items will be furnished without regard to make or model.

b. The price of items to be procured shall be at their total cost to the USG. Unless otherwise specified, the cost estimates of items to be procured, availability determination, payment schedule, and delivery projections quoted are estimates based on current available data. The USG will use its best efforts to advise the Purchaser or its authorized representatives by DD Form 1513-2:

(1) of any identifiable cost increase that might result in an increase in the "Estimated Total Costs" in excess of 10 percent;

(2) of any changes in the payment schedule(s); and

(3) of any delays which might significantly affect the estimated delivery dates;

but its failure to so advise of the above shall not affect the Purchaser's obligation under paragraphs B.1. and B.3. below.

c. The USG will, however, use its best efforts to deliver items or render services for the amount and at the times quoted.

6. Under unusual and compelling circumstances when the national interest of the United States so requires, the USG reserves the right to cancel or suspend all or part of this Offer and Acceptance at any time prior to the delivery of defense articles or performance of services (including training). The USG shall be responsible for all termination costs of its suppliers resulting from cancellations or suspensions under this paragraph.

7. Shall refund to the Purchaser any payments received hereunder which prove to be in excess of the final total cost of delivery and performance of this Offer and Acceptance, and are not required to cover arrearages on other open Offers and Acceptances of the Purchaser.

8. Advises that personnel performing defense services provided under this Offer and Acceptance will not perform any duties of a combatant nature, including any duties relating to training, advising, or otherwise providing assistance regarding combat activities, outside the United States in connection with the performance of these defense services.

9. Advises that in the assignment or employment of United States personnel for the performance of this Offer and Acceptance, the USG will not take into account race, religion, national origin or sex.

10. Advises that, notwithstanding Purchaser's agreement to pay interest on any net amount by which Purchaser may be in arrears on payments (as provided for in paragraph B.3.g. below), USG funds will not be used for disbursements by DOD to its contractors in the event of any such arrears in payments. Accordingly, failure by the Purchaser to make timely payments in the amounts due may result in delays in contract performance by DOD contractors, claims by contractors for increased costs (including the above mentioned interest costs), claims by contractors for termination liability for breach of contract or termination of contracts by the USG under this or other open Offers and Acceptances of the Purchaser at Purchaser's expense.

B. THE PURCHASER:

1. Shall pay to the USG the total cost to the USG of the items, even if the final total cost exceeds the amounts estimated in this Offer and Acceptance.

2. Shall make payment(s) for the items by check(s) or by wire transfer payable in United States dollars to the Treasurer of the United States.

3.a. Shall, if "Terms" specify "cash with acceptance", forward with this Offer and Acceptance a check or wire transfer in the full amount shown as the estimated total cost, and agrees to make such additional payment(s) as may be specified upon notification of cost increase(s) and request(s) for funds to cover such increases.

b. Agrees if "Terms" specifies payment to be "cash prior to delivery" to pay to the USG such amounts at such times as may be specified from time to time by the USG (including any initial deposit set forth under "Terms") in order to meet payment requirements for articles or services to be furnished from the resources of the US Department of Defense. USG requests for funds may be based on estimated requirements to cover forecasted deliveries of articles or costs to provide defense services. It is USG policy to obtain funds 90 days in advance of the time DOD plans such deliveries or incurs such expenses on behalf of the Purchaser.

c. Agrees, if "Terms" specify payment by "dependable undertaking" to pay to the USG such amounts at such times as may be specified from time to time by the USG (including any initial deposit set forth under "Terms") in order to meet payments required by contracts under which items are being procured, and any damages and costs that may accrue, or have accrued, from termination of contracts by the USG because of Purchaser's cancellation of this Offer and Acceptance under paragraph B.7. hereof. USG requests for funds may be based upon estimated requirements for advance and progress payments to suppliers, estimated termination liability, delivery forecasts or evidence of constructive delivery, as the case may be. It is USG policy to obtain such funds 90 days in advance of the time USG makes payments on behalf of the Purchaser.

d. Agrees, if "Terms" specify "payment on delivery" that bills may be dated as of the date(s) of delivery of the defense articles or rendering of the defense services, or upon forecasts of the date(s) thereof.

e. Agrees, if "Terms" specify payment under a Credit Agreement between the Purchaser and DOD, to pay to the USG on a "dependable undertaking" basis, in accordance with B.3.c. above, such costs as may be in excess of the amount funded by the Credit Agreement.

f. Agrees, that requests for funds or billings under paragraphs B.3.a. through e. above are due and payable in full on presentation, or, if a payment date is specified in the request for funds or bill, on the payment date so specified, even if such payment date is not in accord with the estimated payment schedule, if any, contained in this Offer and Acceptance. Without affecting Purchaser's obligation to make such payment(s) when due, documentation concerning advance and progress payments, estimated termination liability or evidence of constructive delivery or shipment in support of request for funds or bills will be made available to the Purchaser by DOD upon request. When appropriate, Purchaser will request adjustment of any questioned billed items by subsequent submission of required discrepancy reports in accordance with paragraph B.6. below.

g. Agrees to pay interest on any net amount by which it is in arrears on payments, determined by considering collectively all of the Purchaser's open Offers and Acceptances with the DOD. Interest shall be calculated on a daily basis. The principal amount of the arrearage shall be computed as the excess of cumulative financial requirements of the Purchaser over total cumulative payments after quarterly billing payment due dates. The rate of interest paid shall be a rate not less than a rate determined by the Secretary of the Treasury taking into consideration the current average market yield on outstanding short-term obligations of the USG as of the last day of the month preceding the net arrearage and shall be computed from the date of net arrearage.

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Figure 3. ANNEX A OF DD 1513

b. Shall designate the Procuring Agency and responsible Paying Office and address thereof to which the USG shall submit requests for funds and bills under this Offer and Acceptance.

4. Shall furnish shipping instructions for the items with its acceptance of this Offer and Acceptance. Such instructions shall include (a) Offer/Release Code, (b) Freight Forwarder Code, and (c) the Mark for Code, as applicable.

5. Shall be responsible for obtaining the appropriate insurance coverage and customs clearances, and, except for items exported by the USG, appropriate export licenses.

6. Shall accept title to the defense articles at the initial point of shipment (see A.4. above). Purchaser shall be responsible for in-transit accounting and settlement of claims against common carriers. Title to defense articles transported by parcel post shall pass to the Purchaser on date of parcel post shipment. Standard Form 364 shall be used in submitting claims to the USG for overage, shortage, damage, duplicate billing, item deficiency, improper identification or improper documentation and shall be submitted by Purchaser promptly. Claims of $100.00 or less will not be reported for overages, shortages, or damages. Claims received after one year from date of passage of title or billing, whichever is later, will be disallowed by the USG, unless the USG determines that unusual and compelling circumstances involving latent defects justify consideration of the claim.

7. May cancel this Offer and Acceptance with respect to any or all of the items listed in this Offer and Acceptance at any time prior to the delivery of defense articles or performance of services (including training). It shall be responsible for all costs resulting from cancellation under this paragraph.

8. Shall, except as may otherwise be mutually agreed in writing, use the items sold hereunder only:

a. For the purposes specified in the Mutual Defense Assistance Agreement, if any, between the USG and the Purchaser;

b. For the purposes specified in any bilateral or regional defense treaty to which the USG and the Purchaser are both parties, if subparagraph a. of this paragraph is inapplicable; or

c. For internal security, individual self-defense, and/or civic action, if subparagraphs a. and b. of this paragraph are inapplicable.

9. Shall not transfer title to, or possession of, the defense articles, components and associated support material, related training or other defense services (including any plans, specifications or information) furnished under this Offer and Acceptance to anyone not an officer, employee or agent of the Purchaser (excluding transportation agencies), and shall not use or permit their use for purposes other than those authorized by B.8. above, unless the written consent of the USG has first been obtained. To the extent that any items, plans, specifications, or information furnished in connection with this Offer and Acceptance may be classified by the USG for security purposes, the Purchaser shall maintain a similar classification and employ all measures necessary to preserve such security, equivalent to those employed by the USG, throughout the period during which the USG may maintain such classification. The USG will use its best efforts to notify the Purchaser if the classification is changed. The Purchaser will ensure, by all means available to it, respect for proprietary rights in any defense article and any plans, specifications, or information furnished, whether patented or not.

C. INDEMNIFICATION AND ASSUMPTION OF RISKS:

1. It is understood by the Purchaser that the USG in procuring and furnishing the items specified in this Offer and Acceptance does so on a nonprofit basis for the benefit of the Purchaser. The Purchaser therefore undertakes, subject to A.3. above, to indemnify and hold the USG, its agents, officers, and employees harmless from any and all loss or liability (whether in tort or in contract) which might arise in connection with this Offer and Acceptance because of: (i) injury to or death of personnel of Purchaser or third parties; (ii) damage to or destruction of (A) property of the DOD furnished to Purchaser or suppliers specifically to implement this Offer and Acceptance, (B) property of Purchaser (including the items ordered by Purchaser pursuant to this Offer and Acceptance, before or after passage of title to Purchaser), or (C) property of third parties; or (iii) patent infringement.

2. Subject to any express, special contractual warranties obtained for the Purchaser in accordance with A.2. above, the Purchaser agrees to relieve the contractors and subcontractors of the USG from liability for, and will assume the risk of, loss or damage to: (i) Purchaser's property (including the items procured pursuant to this Offer and Acceptance, before or after passage of title to Purchaser) and (ii) property of the DOD furnished to suppliers specifically to implement this Offer and Acceptance, to the same extent that USG would assume for its property if it were procuring for itself the item or items procured pursuant to this Offer and Acceptance.

D. ACCEPTANCE:

1. To accept this Offer and Acceptance, the Purchaser will not later than the expiration date of the Offer and Acceptance, as set forth herein, return three copies properly signed to the security assistance accounting center designated herein, accompanied by such initial deposit or other payment as may be required by the Terms herein. In addition, Purchaser will concurrently return three copies properly signed to the U.S. Military Department or Defense Agency making the offer. When properly accepted and returned as specified herein, the provisions of this Offer and Acceptance shall be binding upon the USG and the Purchaser.

2. It is understood that implementation of the Offer and Acceptance cannot proceed without a proper acceptance. Failure to comply with Terms and Conditions required for acceptance, as, for example, delay in submission of any required initial deposit or payment of full estimated cost, as the case may be, may require revision or reissue of the Offer and Acceptance.

3. Unless a written request for extension is made by the Purchaser and granted in writing by an authorized representative of the appropriate U.S. Military Department or Defense Agency, this Offer and Acceptance shall terminate on the expiration date set forth herein.

E. ENCLOSURES.

Enclosures attached hereto are, by this reference, incorporated herein and are made a part hereof as though set forth in full.

F. PUBLIC INSPECTION:

This Offer and Acceptance will be made available for public inspection to the fullest extent possible consistent with the national security of the United States.

EXPLANATORY NOTES

1. The item or reference numbers appearing in the "ITEM OR REF. NO." column may not correspond with references used in Purchasers' original request. However, this number, together with the case identifier shown should always be used as a reference in future correspondence.

2. Availability leadtime quoted is the estimated number of months required to complete delivery of the item(s) in accordance with the terms of delivery after receipt of acceptance of this Offer pursuant to Section D. of the Conditions, and the conclusions of appropriate financial arrangements. Phased deliveries are shown by quantity and leadtime for each increment, where applicable. Items for which delivery leadtime is not shown are noted in column headed "Item Description" as items to be installed in the applicable end item prior to shipment.

3. The planned source of supply for each item is expressed in the following codes:

S	(*)	Service Stocks
P	(*)	Procurement
R	(*)	Rebuild/Repair/Modification
X	(*)	Stock and procurement, e.g., initial repair parts
E	(*)	"Mimex" major items in long supply or excess

*Availability is stated in months.

4. Condition of the defense articles shown in the "AVAILABILITY AND REMARKS" column is expressed in the following codes:

A1	–	Items to be provided in existing condition without repair, restoration or rehabilitation which may be required. Condition indicated in item description.
M	–	Articles of mixed condition (new, reworked, and rehabilitated) may be commingled when issued. Example: repair parts, ammunition, set assemblies, kits, tool sets and shop sets.
B	–	Serviceable defense articles.
O	–	Obsolete or non-standard item in an "AS IS" condition for which repair parts support may not be available from DOD.
S	–	Substitute. Suitable substitutions may be shipped for unavailable defense articles unless otherwise advised by the Purchaser.
U	–	Reworked or rehabilitated defense articles possessing original appearance insofar as practicable; including all Modification Work Orders and Engineering Change Orders as applied to such defense articles when issued but defense articles should not be considered as having had total replacement of worn parts and/or assemblies. Only parts and components not meeting US Armed Forces serviceability tolerances and standards will have been replaced; in all instances such defense articles will meet US Armed Forces standards of serviceability.

5. Training notes:

AP	–	Annual Training Program.
SP	–	Special Training designed to support purchase of US equipment.
NC	–	This offer does not constitute a commitment to provide US training.
SC	–	US Training concurrently being addressed in separate Offer and Acceptance.
NR	–	No US training is required in support of this purchase.

6. For meaning of delivery codes, see Military Assistance Program Address Directory (MAPAD).

7. The use of Offer/Release Codes "Y" and "Z" will incur a storage fee of .125% per month for shipment delays in excess of 15 days.

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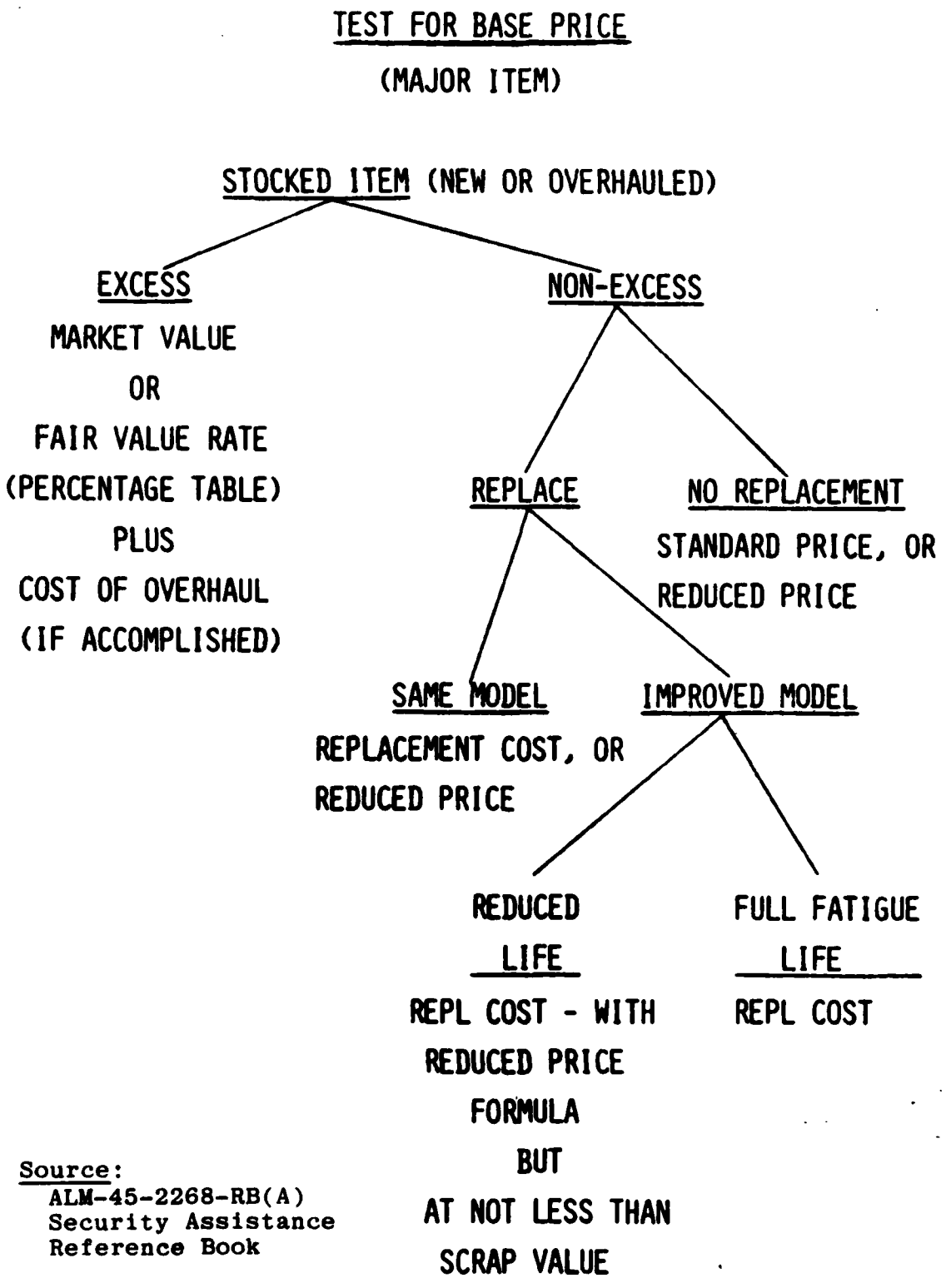
Figure 3. ANNEX A OF DD 1513 (continued)

is avoided by using an amendment, or a modification to the LOA. The amendment is used for minor changes that require purchaser acceptance before implementation and only to meet essential administrative needs. Where the changes to the LOA are unilateral on the part of the USG and do not require purchaser acceptance, a modification is used. The modification is most frequently used when a case is decreased in scope, when its availability is changed, when the total cost of a case is increased by 10% or more, or when the case increases by a large amount ($500,000) that is less than 10% for a high cost case. The form provides for customer acknowledgement of the change only. A price differential between the initial offer and the final case close-out price within the 10% limit does not require renegotiation.

B. Price Estimates:

1. Need for Price Estimates: As stated earlier, the price estimating process is the responsibility of the MSC that has management responsibility for the item or items that the customer wants to buy. The price entered on the DD Form 1513 for each case line is one total price for all the items in that case line and is called a single selling price. The single selling price consists of the base price for the item(s) plus all USG costs such as add-on charges for nonrecurring research, development, test, and evaluation; nonrecurring production costs; recurring production costs, and asset use charges. The base price for materiel sold to foreign countries is established on the basis of whether the item is from procurement or stock, and if from stock, whether the item is to be replaced in inventory (see Figure 4). The replacement determination



Source:
ALM-45-2268-RB(A)
Security Assistance
Reference Book

Figure 4. TEST FOR BASE PRICE

is based on whether the sale will create a need for an inventory replacement and whether the replacement decision will be reflected in the Department of Defense program budgeting system within 12 months of its drop from inventory.

2. Price Estimating Procedure:

a. Department of Defense Instruction (DODI) 2140.1, March 9, 1977, (Ref 5) is the basic guidance for pricing materiel and services sold to foreign nations. Army Regulation (AR) 37-60, Pricing for Materiel and Services, (Ref 6) is the Army implementation of this guidance.

b. At the subordinate commands, the International Logistics Directorate takes the administrative lead in processing the DD Form 1513 during the development phase. The determination of the availability of the item(s) and the preparation of the price estimate is done by item managers. The price estimates for items included in that case but that are not managed by the MSC preparing the LOA are provided for inclusion by the other responsible commands. Once the required information is gathered, the IL Directorate prepares the case. Before the case is sent to USASAC, the Comptroller Directorate validates the price estimates. See Appendix B for a detailed discussion of the case development phase.

c. Several different methods are used to arrive at a price estimate. Where the production of the item is ongoing, the price is usually that of the items being produced; where not, if the item has been produced/purchased recently, that price as it is or inflated, using indices, is used. The prices obtained in this manner will be the most accurate. Where this is not possible

and the use of a replacement price is mandated, historic prices are inflated using indices. If a replacement price is not mandated, the standard price (price of record) is used. The Defense Acquisition Regulation (DAR) does not allow producers to be contacted for binding price quotes unless it is in the form of a Request For Quotation (RFQ) or a Request For Proposal (RFP). This does not prohibit contacting the contractors for quotes that are non-binding on them, i.e., "solicitations for informational or planning purposes." Unfortunately, the MSCs have often found these informal quotes to be prepared hastily and usually lower than RFQ or RFP quotes.

3. Standard Price:

a. There is no single price available to IL directorates at the subordinate commands to be used as a base price for FMS cases. The values assigned to Army items or equipment and called "standard" prices are primarily designed to provide a simple and uniform method for inventory valuation, accounting, and funds transfer within DoD. These prices are current as of the last representative buy.

b. The "standard" price as published and associated with the Army Master Data File (AMDF) for secondary items and the Supply Bulletin (SB) 700-20 or SB 710-1-1 for major items, focuses on historical purchase cost, not replacement cost or current market value. Where AMDF, SB 700-20 or SB710-1-1 are the only available price sources, they should be used with caution. The applicable historic cost indices must be used to bring the costs to the present

value where replacement pricing is appropriate. The National Stock Number Master Data Record (NSNMDR) in the Commodity Command Standard System (CCSS) provides secondary item prices for economic order quantities and the date of the last such purchase. The NSNMDR is more current than the AMDF which it feeds.

4. Audits:

a. Between 1976 and 1980 the GAO, DAS, and AAA completed over 60 audits of the FMS program, most of which were directed at some aspect of pricing. A listing of recent reports of audit is in Appendix C.

b. The majority of these audits which were critical of the Army's FMS process dealt with undercharging customers by not including some element of cost, usually an element of the add-on charges. These audits resulted from the increased emphasis in the mid-1970s on recovering all costs incurred by the USG on behalf of the customer.

c. Most of these problems have been resolved by the Army and consequently fewer audits of the Army's FMS program have been conducted in the past two years. Also, as a result of the plethora of audits, a great deal of emphasis was put on improving the management of the FMS program and especially the price estimating process at the MSCs.

C. Reasons for Suboptimal Price Estimates:

1. Interviewees indicated that there were many reasons for the difference between the initial and final prices. Those problems that appeared to be internal to the organization, such as insufficient personnel, decentralization of the organization, etc.,

are not discussed here. There were some problems that appeared to be universal, these are discussed below.

2. The MSCs are charged with developing the best price estimate within the limits of timeliness and practicality. The majority of these items will have an existing contract or production line and the contractor can usually provide prices that are credible for the next 12 to 18 months. Many TACOM items fall into this category. These cases rarely present problems. The remaining cases present the problems and are not unique to any one command.

3. A large portion of the difficult-to-price items are obsolete and/or have not been produced for several years or have a different configuration. Updating a historic cost has limitations, especially where there is little competition in the market to produce them.

4. If a producer can be found for these items, the cost of setting up and staffing a production line will be very high per item unless at least an economic order quantity is required.

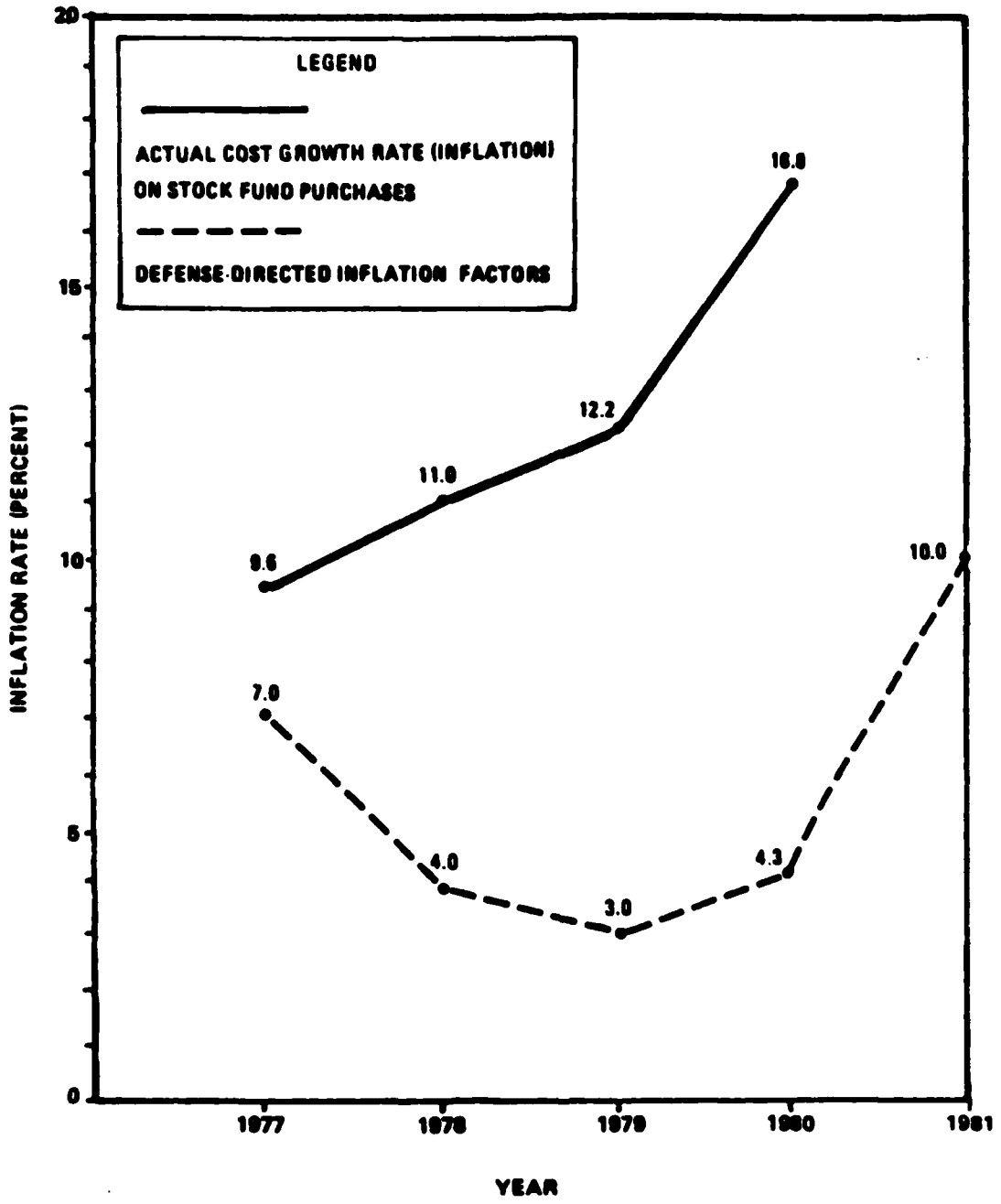
5. When the needs of several customers are combined in a consolidated buy, a price is established for that quantity. If one of the customers decides to cancel his portion of the order, the contracted quantity decreases and usually the unit price increases.

6. Often a customer requests that configuration changes be made to an item or items that are being purchased. Some of these changes have no Army counterpart and, therefore, no historic cost data is available. These changes can and do increase the price dramatically.

7. If the potential customer does not sign (accept) the prepared LOA within the required time frame or if the signed LOA is not returned to the MSC expeditiously, existing contracts may have expired or the producer price "guarantee" may have expired requiring renegotiation and a change in the price.

8. Timeliness plays a role in price inflation. The rate of inflation has been decreasing recently but the unpredictably high rates that were experienced earlier made price projections very difficult. Many of the cases estimated at that time have not yet been closed and large variations can be expected from them.

9. On many cases, price projections are required. These are determined by applying an expected inflation rate to the current replacement price of the item. The MSCs must use indices provided by the Office of the Secretary of Defense (OSD). The indices are those provided by the Office of Management and Budget for preparation of the President's budget. In the past they have often reflected less than half the reasonably expected future inflation. The MSCs have been directed to use these indices in spite of the recognized understatement of the inflationary trend. A Government Accounting Office report of audit (AFMD-81-62, September 10, 1981, Millions in Losses Continue on Defense Stock Fund Sales to Foreign Customers) (Ref 7) states that the inflation factors used by the DoD (OSD indices) to estimate FMS replacement costs are unrealistically low and recommended that a more realistic inflation index be adopted. The graph in Figure 5, though for Air Force stock fund items, portrays the difference between actual inflation and the OSD index.



Source: GAO Report AFMD-81-62, Millions in Losses Continue on Defense Stock Fund Sales to Foreign Customers, September 1981.

Figure 5. COMPARISON OF ACTUAL COST GROWTH RATE AND DEFENSE-DIRECTED INFLATION FACTORS ON AIR FORCE STOCK FUND PURCHASES

10. Though there are many checks and validations made on the component and total case costs, some mathematical errors still appear.

11. As previously mentioned, problems are experienced with the quality of the informational price quotes provided by the contractors. In most cases the informal quote is solicited because without the certified availability of funds for a case, neither an RFQ nor an RFP can be issued. This is the situation prior to the LOA being accepted by the customer.

D. Improvements that have potential:

1. Introduction: With the existing legal and regulatory constraints unchanged, coupled with the changing foreign policy objectives, price differences can be expected to continue as a way of life. Improvements are possible but great changes are not. The internal processes used by each of the subordinate commands to establish a price estimate appear to be orderly and sound. Little criticism can be leveled here. Many of the improvements discussed below have been initiated at one or more of the MSCs and are presented here for consideration by the other commands. The potential for improving on these processes would be enhanced if a few key regulatory constraints could be overcome, as explained later.

2. Automation:

a. The automation of the price estimating process has great potential for improving price estimates through the elimination of mathematical errors in the single price estimate and through the standardization and objectivity that such a system would engender.

Also, visibility and awareness of price effects and price changes as the case is executed would be assured.

b. Since 1976, TACOM has been developing an automated FMS case processing system called TACOM Security Assistance Management System (TASAMS). By May 1979, the command had an operating system consisting of 9 individually functioning programs (see Figure 6). The command demonstrated cost savings of over $57,000 in 1979 through reduced reliance on overtime funds or borrowed manpower and reduced requirements for reproduction services. Additionally, they have demonstrated savings in time and paperwork to process a case and improved accuracy and consistency in their cost estimates and reports. The heart of the TACOM system is the pricing program which utilizes a data register of hardware cost elements for those major items, APA secondary items, and tool sets most frequently demanded by their FMS customers.

c. The Security Assistance Automation Army (SA3) previously called SA Distributive Data Processing System (SADDAPS) is being tested at TSARCOM for eventual distribution to all MSCs. This system is similar to TASAMS in application. Through a standard system such as this, the MSCs will be able to share and reconcile data more rapidly among themselves and with USASAC.

d. CECOM is in the process of developing an automated price and availability system.

e. MICOM is developing an automated case milestone tracking system that will alert managers of potential problems and thus provide reaction time.

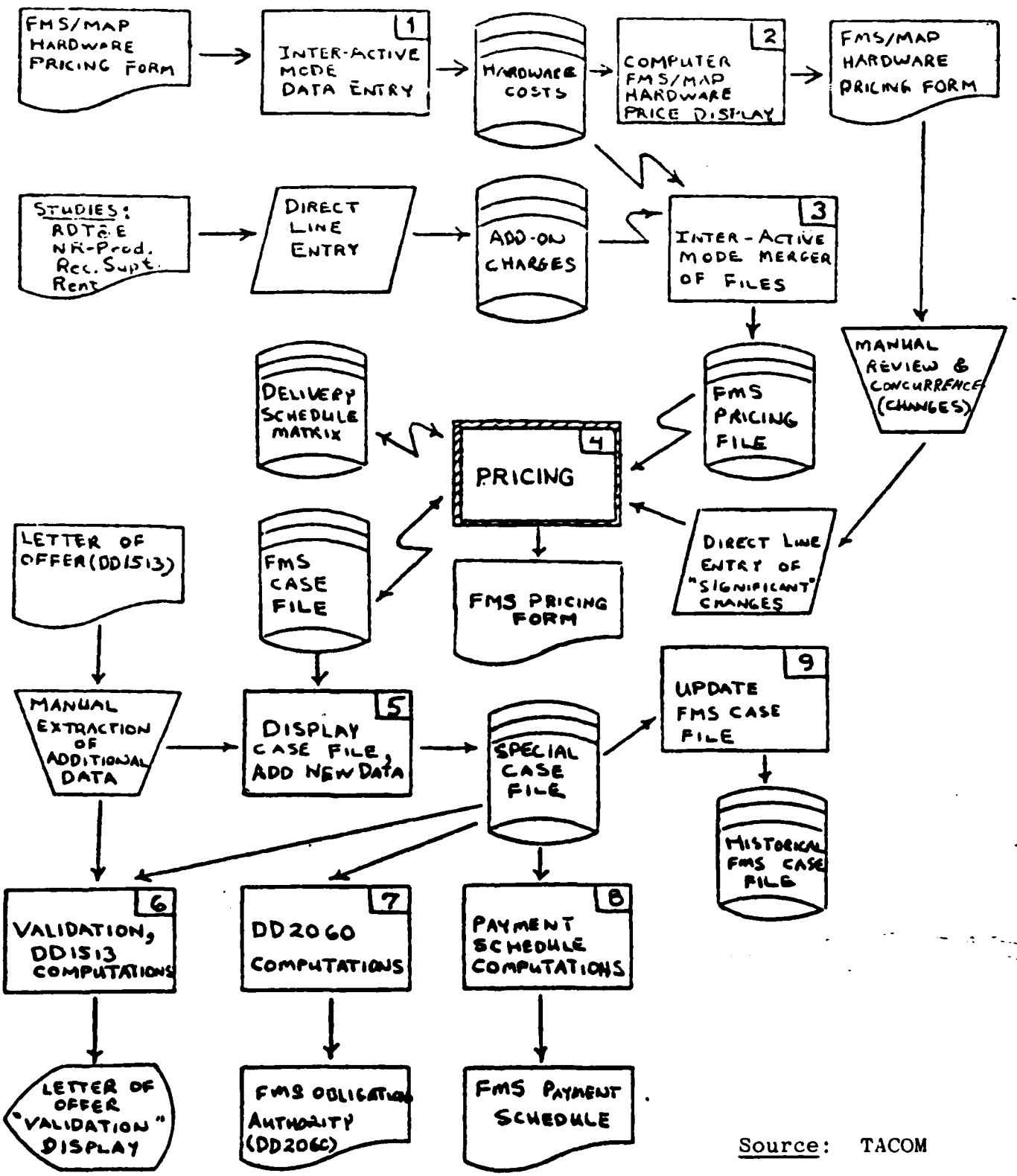


Figure 6. TASAMS OPERATING SYSTEM

f. USASAC is now studying the extent to which centralized preparation of LOAs should be undertaken.

3. Indexing: When an item that was scheduled for the Army is taken from the production line and provided to an FMS customer, or where an item is taken from inventory and months or years will elapse before that item can be replaced, the customer is charged the price at the time of replacement or at the time that the item would have been produced. The current price in such an instance would be known but the price of that item some years in the future must be projected. This can only be done by means of inflation indices. The OSD indices that the MSCs are mandated to use are known to be low (see Figure 5). DARCOM should be permitted to produce its own indices for use in FMS price projections.

4. Buy and Stock in Anticipation of FMS:

a. In FY 82 a Special Defense Acquisition Fund (SDAF) was established. Its purpose is to procure items with a high foreign customer demand that are in short supply and in the US inventory, that are relatively unsophisticated items such as medium tanks, artillery, ammunition, anti-tank missiles, and basic communication systems, that would have no impact on US readiness.

b. Funding for the SDAF requires no direct DOD appropriation (though authorized) and comes from FMS nonrecurring RDT&E charges, asset use charges, contractor rental payments, and collections from the sale of defense articles which will not be replaced in stock. In FY 82, $125 million were allocated for the SDAF of which about $110 million were obligated. In FY 83, the ceiling is $600 million.

c. DSAA has the DOD responsibility for overall program management.

d. The implementation of this fund will overcome many of the problems that have plagued the FMS process and that have affected the Army's readiness posture because of the USG's assistance to allies. For those items that the fund stocks, better price estimates will be available and price projections will not be required. A full discussion of the SDAF may be found in Reference 8.

5. Solicitation of Firm Prices from Contractors:

a. If firm prices rather than informational price quotes could be solicited from producers, better price estimates would result. This alternative was addressed by Snow in LSO report 513 (Oct 1975) (Ref 9). Snow presented 5 alternatives. His recommended alternative was as follows:

> "Amend Army Procurement Procedures, Section 1-403.50(c) and the Defense Acquisition Regulation, Section 1-318 with a clause that in essence stipulates that the solicitation is for price and availability information for preparation of a US Government offer to a foreign nation for materiel to be sold under the FMS program, no funds are currently available but the offer is expected to be accepted; and that the contractor will be notified when and if funds are available to award the contract. Because of the current lead time for the FMS offer/acceptance procedure, the reply to the solicitation may be in two parts. First a reply stating an upper limit unit cost and availability data to be provided in 15 days after the date of the solicitation and a second submission with a firm price not greater than the previously stated upper limit to be provided not later than 90 days after the date of the solicitation; the solicitation must be valid for at least 90 days after the final closing date in the solicitation."

b. Snow admits that this alternative proposes "a radical departure from US Government procedures." This alternative still

has merit and should be implemented. The only caution is that the soliciting MSC must insure that all possible bidders have an opportunity to respond.

6. Quote of a Fixed Price to the Customer: For some cases the price estimate problems could be overcome by an optional fixed price. The customer is offered a fixed price for the items that he wishes to purchase as an option. That is, once he has accepted and signed the LOA, he will know exactly the price that he will pay. Under the present system, the customer is quoted an estimated price but Annex A to the LOA states that he will pay the full price for the items, regardless of what the initially quoted price was. This is a controversial option but the positive aspects would appear to outweigh the negative. There would be some definite statutory problems that would have to be overcome before this alternative could be used, the primary being that by law FMS must be conducted at no cost to the USG. Annex A to the LOA states:

> "that the USG in procuring and furnishing the items specified in this Offer and Acceptance does so on a non-profit basis."

Since this is an option, only those customers who feel they would benefit would take advantage of it. The advantages of using this option are these:

a. The administrative cost of managing FMS cases would be greatly reduced. Once the case has been accepted by both the USG and the customer, no further intervention would be required by either party through the case close out.

b. The customer would know exactly what the price of the case would be and could budget for it.

c. Some cases would likely be overcharged while others would be undercharged, with the anticipated end result being a nearly zero net gain or loss.

7. Management Reserve Concept:

a. For most items price with acceptable accuracy can be established. Some items present problems in that any price established for them carries with it a high degree of uncertainty, especially when inflation is high or rapidly changing. The effect is that the USG may have to request more funds from the customer. A management reserve is a means of overcoming this problem.

b. An investigation of the management reserve concept was performed by this office in 1975. One of the recommendations was that the Army adopt the use of the concept. See Snow, LSO Report 616, (Ref 10).

c. The concept of a management reserve, also called a contingency reserve, program reserve, or contingency factor has been used by the Army and Air Force in a few instances. There is no known policy that suggests its use nor are there any specific prohibitions against its use. Snow has defined Management Reserve as:

> "Management Reserve is a discretionary and contingency cost element to be included in the initial unit price estimate quoted to the foreign nation on the letter of offer/acceptance (DD 1513), to provide for unusual price escalation beyond that found in inflation factors."

d. The concept is simple in application. Snow (Ref 10, pg 9) developed a list of conditions under which the risk of developing a low price estimate is increased. His list is as follows:

-Delivery time for items is estimated to be greater than one year and item is not to be delivered from inventory.

-Item has not been purchased in the last 12 months.

-Research and Development is required.

-Item is new to the Army inventory and contains advanced technology components.

-Item is not a US standard inventory item.

-Item has not been procured before by the Army.

-Required quantity is small, not economic order quantity.

His findings indicated that a combination of any two of the conditions usually resulted in the need for an upward price adjustment. Where a price estimate has a high degree of risk associated with it, price analysts would have the freedom to add a percentage of the unit price to the estimated price as a contingency factor. The USAF developed a listing of percentages for low, normal, and high risk categories. See Table 1 below.

TABLE 1. USAF PROGRAM RESERVE FACTORS (REF 10)

FMS Case Price Escalation Risk	Factors (Percentage of known cost)
LOW	7%
NORMAL	10%
HIGH	20%

e. Advantages: The fact that the USG would not have to request more funds from the customer means that the associated embarassment would be avoided as well as the additional paperwork. The customer would still pay the full final price of the items specified on the DD 1513 and would have money over and above the cost returned to it.

f. Disadvantages: Arguments have been presented against the use of a management reserve. Most appear to have arisen because of a lack of understanding of the concept. The following three most prevalent arguments will now be discussed:

-Its use may make USG prices non-competitive.

-It may encourage less rigorous price estimating.

-The 10% limit could be exceeded without requiring a modification to the DD 1513.

(1) In the first argument, competition, the types of items that would require the use of a management reserve will be mostly those that the USG has sold in the past and are now unavailable from the inventory and require a new production run of less than economic production quantities. The customer can be reasonably expected to purchase items that he already has and with which his troops are familiar. The same item cannot be purchased elsewhere and to buy from a different country requires the purchase of spares and repair parts, repair manuals, and often training. In the few instances where competition was a factor, the loss of the sale would be of little consequence.

(2) In the case of the rigor of the price estimates, there is no reason to expect that the existing checks and balances would be bypassed. Estimates with a management reserve will be justified and prepared as would those without. In addition, those estimates using a management reserve would have to justify the use of it, in detail.

(3) Mentioned earlier in the report was the requirement of a modification, DD 1513-2, to the LOA if the price estimate was exceeded by 10% or more. With the management reserve, this percentage in effect would become larger before the modification is required; however, this would not be obvious to the customer. Moreover, since the purpose of the management reserve is to decrease those instances where a modification would be required, there should be few cases where the 10% is in fact exceeded.

E. Determination of Price Estimate versus Actual Charge Differences:

1. Introduction:

a. The original objectives for this study were aimed at improving the existing cost estimating process on the assumption that the estimates are generally low and too often result in spectacular price adjustments at case close out. This assumption seems to have arisen as a result of the plethora of GAO, DAS, and AAA audit reports that were written in the mid to late 1970s. Interviews with MSC personnel contradicted that assumption but no factual material could be located at the MSCs visited to confirm

or refute the statements at that time. USASAC and SAAC were contacted to determine if the Army's performance had been measured. No one could recall any such research in the recent past. Queries to other groups within the Army provided no new findings. The Air Force (Air Force Logistics Center at Wright Patterson Air Force Base) also could not recall any studies of their FMS cost estimating performance. At that point this study was expanded in scope to include an analysis of the Army's performance over the previous five years.

b. Since about 2000 Army FMS cases are completed each year, five years would provide approximately 10000 cases to investigate. This large amount of data lent itself to computer manipulation requiring that the data be available on magnetic tapes. Consideration was given to sampling the case files resident at the MSCs, but these files are only retained at the MSC for about two years.

c. Magnetic tapes of historical financial data were requested from USASAC and SAAC. The information requested was the initial case or case line prices and the final case or case line prices for completed cases containing major items. USASAC stated that they could provide final case line and case prices but that the initial price estimates are updated by overlaying the previous data thus losing the needed data. SAAC stated that they could provide the requested data, though historical initial case extended (product of unit cost of item and number of items) line values have only been retained in computer data files since March 1980. Later, DSAA was also contacted for, and did provide, historical

financial data. USASAC was eventually able to provide a small sample of the needed data in "hard copy".

2. Data Sources Used in the Analysis:

a. DSAA Data:

(1) A file of 13,620 records (4146 cases) was provided by DSAA. This file consisted of closed Army cases for purchases of major and secondary items and services. Of this file, 978 records (case lines) were for major items. This represented 605 different cases. Initially, a file of 13,689 records was provided; but since this file contained classified data, it could not be used. Subsequently, with the removal of the classified data, the file of 13,620 records was provided. The classified data was provided in hard copy and was used in Section j below. The initial and final (at case close out) costs were for the total case, with all add-on charges included. Case lines with final costs were broken out but unit costs without any add-on charges could not be derived.

(2) The DSAA and SAAC major item data is not from the same data base. The files had 98 cases that were common (16% for DSAA and 24% for SAAC).

b. SAAC Data:

(1) During a visit to SAAC, 24,471 Army case lines were accessed. The data for each case line consisted of service code (B for Army), country code, case code, case line number, final extended line value, initial extended line value, and the ratio of the two values. For a majority of these case lines the initial cost estimate was not available.

(2) A second data file was created from those closed case lines where an initial case line value was available. This resulted in 3,923 closed case lines. The data for each line consisted of service code, country code, case code, case line number (also called RSN), SAAC ordered quantity, DSAA ordered quantity (DSAA quantities may be lower than SAAC quantities if DSAA has not received documentation for final payments), final extended line value, initial extended line value, and ratio of initial to final extended line values.

(3) A third product, consisting of 7,308 case lines was also prepared to provide case duration data. The data for each case line consisted of country code, case code, case line number, 26 character item description, a four character Federal Supply Class code, a code indicating case was closed, date case was implemented, date case was closed, DSAA quantity, and delivered case line value.

(4) Subsequent to the visit, updated versions of these same files were received on magnetic tape. Two data files were provided by SAAC. One file (given the named FILE1) consisting of 4,166 case lines gives the quantity ordered and the initial and final case prices. The second file (given the name FILE2) consisting of 7,314 case lines gives the case implementation and close dates, the Federal Supply Class (FSC), and a brief nomenclature for the items ordered, quantity ordered, and the delivered case line value. These files corresponded to those in (2) and (3) above. Compatible FILE1 and FILE2 case lines were combined resulting in 717 major item case lines with initial and final price and corresponding dates. Of

these 717 case lines, two were later deleted from the file because of unusually high individual ratios. The file of all case lines was also decreased by the above two case lines and 18 other case lines with individual ratios greater than 1,000% (ranging from 1,000% to 35,000%).

c. USASAC Data: Two separate samples of data in "hard copy" were obtained as a result of a visit. One set was extracted from the working paper case files and the other retrieved from the computer data base and sent later.

(1) Data from Files: Fifty seven major item case lines were selected and major item unit prices extracted. Of these, four did not have final unit prices though one final unit price was found in the SAAC data and was added. The resulting file consisted of 54 case lines of initial and final unit prices.

(2) Data from computer base: Data for 37 major item case lines was obtained from two USASAC output products, DRSAC-O Form 738, and the International Logistics Information File--FMS/SSA Case Line Data (ILIF). Twenty of the case lines were common to each set of USASAC data.

3. Measures of Estimate Acceptability:

a. For an individual case (or case line) the ratio (expressed as a percentage) of the final price to the initial price indicates the acceptability of the initial estimate. The formula is shown below:

$$\frac{\text{Final Price} \times 100}{\text{Initial Price}} = \text{Individual Ratio (IR)}$$

The ideal is to have a ratio of 100% (initial and final prices are the same) but ratios between 90% and 110% are within the acceptable range. A ratio that is below 100% indicates an overestimation of the price and could potentially lose customers to other competitor countries. A ratio below 100% also indicates that the customer will be billed less for his purchases than was initially estimated.

b. Cases with a ratio greater than 100% will require more money from the customer than the initial estimate indicated.

c. The tables for the four data files (Table 2, SAAC; Tables 3 and 4 for USASAC; Table 5 for DSAA) show the distributions of the individual ratios for the individual cases or case lines.

d. For each data file, the acceptability of the estimated price was measured by a weighted ratio. This ratio is found by summing all the final case or case line prices for a data file and dividing this by the sum of all the initial estimated prices for that file. The result is expressed as a percentage for ease of interpretation. The formula is shown below:

$$\frac{\text{Sum of Final Prices} \times 100}{\text{Sum of Initial Prices}} = \text{Weighted Ratio (WR)}$$

The weighted ratio is weighted by the individual prices and indicates, for the general case, how much money is actually charged for each $100 that the USG stated it would charge. For example, in the file of SAAC data (Table 2) for case lines of major items, the weighted ratio is 96.63%. This indicates that for each $100 that was estimated for the case line, the customer was billed $96.63. This is favorable to the USG since it does not have to request more money from the customer and since there is only a four percent difference

between the estimate and the final price, the impact of competition is negligible.

e. Another measure of performance is an estimate of the percent of cases or case lines that are acceptable. Acceptability is defined as the final price being within 10% of the initial estimate, that is, the individual case or case line ratio falling between 90% and 110%. For the SAAC data file, 63.60% of the case lines fell into this acceptability range. For this data, the USG can expect to have between 60.26% and 67.30% of all case lines fall in the acceptable range with a 95% confidence level. Conversely, if competition is ignored, then case lines with a ratio greater than 110% are in the unacceptable range and, in general, the USG can expect to have between 10.92% and 15.94% of case lines in the unacceptable region with a 95% confidence level.

f. The standard deviation for the weighted average was computed using the formula below:

$$\frac{\sum\left\{\left(IR - \frac{\sum IR}{N}\right)^2 \times (\text{INITIAL PRICE})^2\right\}}{\left(\sum \text{INITIAL PRICE}\right)^2} = SD$$

4. Types of Analyses:

a. Total File Ratios.

(1) For the SAAC data, case line costs were used to establish the total file (WR) ratios. For USASAC data, case line unit costs were used. The same type of analysis was performed on the DSAA data for case costs with add-on charges. As stated

before, there is a physical difference between the data obtained from SAAC and DSAA. However, a CHI square test was performed to determine if the two files could be combined for further analysis. Because of the high CHI square value (229.5 with 3 degrees of freedom), the files were not combined. The four files are analyzed individually to establish a weighted ratio. Other analyses are conducted only on the SAAC and DSAA data files. These other analyses were performed to determine if there was a correlation between the ratios and data parameters. These analyses are discussed in Appendix D.

(2) SAAC Data: The distribution of individual ratios for case lines with major items only and for all case lines may be seen in Table 2. The weighted ratio and median individual ratio are shown in the table. For the 715 major item case lines, 456 had individual ratios falling within the acceptable region (90% to 110%). At a 95% confidence level, the percent of acceptable cases ranges from 67.30% to 60.26%. At the same confidence level, the percent of clearly unacceptable cases (IR > 110%) ranges from 15.94% to 10.92%. For all items in the file, at a 95% confidence level, between 54.07% and 51.03% were acceptable and between 18.26% and 15.94% were unacceptable. The case lines mentioned earlier that were deleted from the two files did not change the weighted ratio.

TABLE 2. DISTRIBUTION OF SAAC FILE RATIOS

RATIO (%) RANGE	PERCENT OF RATIOS WITHIN RANGES	
	MAJOR ITEMS	ALL ITEMS
0 - 9.9	0.6	2.3
10 - 19.9	1.5	2.3
20 - 29.9	1.0	2.0
30 - 39.9	1.3	2.5
40 - 49.9	1.7	2.7
50 - 59.9	1.5	2.6
60 - 59.9	3.2	3.4
70 - 79.9	4.8	4.8
80 - 89.9	7.6	8.2
90 - 99.9	23.4	18.7
100 -109.9	40.4	33.8
110 -119.9	2.4	3.5
120 -129.9	2.1	2.4
130 -139.9	1.8	1.9
140 -149.9	1.4	1.1
150 -159.9	0.4	0.9
160 -169.9	0.6	0.9
170 -179.9	0.3	0.6
180 -189.9	1.3	0.8
190 -199.9	0.4	0.6
200 & over	2.8	4.0
Total Case Lines	715	4118
Lowest Ratio	1.00%	0.04%
Highest Ratio	790.66%	899.05%
Median Ratio	100.00%	100.00%
Weighted Ratio	96.63%	97.58%
Standard Deviation of Weighted Ratio	2.4626	7.6945

(3) USASAC Data: There was some commonality between the data obtained from case files and that obtained from the data base. This is noted below.

(a) Case file data: This file of 54 major item records had a weighted ratio of 99.17%, a median individual ratio of 100.00%, and a distribution of individual ratios as shown in Table 3. Twenty of these records (37%) were the same as in the "data base" data below. Thirty-seven of these case lines had individual ratios falling within the acceptable region. At a 95% confidence level, the percent of acceptable cases ranges from 80.91% to 56.13%. At the same cconfidence level, the percent of unacceptable cases (IR > 110%) ranges from 31.11% to 9.63%.

(b) "Data Base" Data: The total file of 37 major item records had a weighted ratio of 98.19%, a median individual ratio of 100.00%, and a distribution of individual ratios as shown in Table 4. Twenty-seven of these case lines had individual ratios falling in the acceptable region. At a 95% confidence level, the percent of acceptable cases ranges from 87.27% to 58.66%. At the same confidence level, the percent of unacceptable cases ranges from 16.91% to 0%.

TABLE 3. DISTRIBUTION OF USASAC CASE FILE DATA RATIOS

RATIO (%) RANGE	PERCENT OF RATIOS WITHIN RANGES
0 - 9.9	
10 - 19.9	1.9
0 - 29.9	
30 - 39.9	1.9
40 - 49.9	
50 - 59.9	
60 - 69.9	1.9
70 - 79.9	1.9
80 - 89.9	3.7
90 - 99.9	11.1
100 -109.9	57.4
110 -119.9	13.0
120 -129.9	
130 -139.9	3.7
140 -149.9	1.9
150 -159.9	
over 236.73	1.9
Total Case Lines =	54

Median Ratio	100.00%
Weighted Ratio	99.17%
Standard Deviation of Weighted Ratio	3.0366

TABLE 4. DISTRIBUTION OF USASAC "DATA BASE" DATA RATIOS

RATIO (%) RANGE	PERCENT OF RATIOS WITHIN RANGES
0 - 9.9	
10 - 19.9	
20 - 29.9	
30 - 39.9	2.7
40 - 49.9	
50 - 59.9	2.7
60 - 69.9	
70 - 79.9	2.7
80 - 89.9	10.8
90 - 99.9	16.2
100 - 109.9	56.8
110 - 119.9	5.4
120 - 129.9	
130 - 139.9	2.7
Total Case Lines	37

Median Ratio	100.00%
Weighted Ratio	98.19%
Standard Deviation of Weighted Ratio	1.8952

(4) DSAA Data: The distribution of individual ratios is shown in Table 5. For the 605 cases having major items, 405 had individual ratios falling in the acceptable region. At a 95% confidence level, the percent of acceptable cases ranges from 70.68% to 63.20%. At the same confidence level, the percent of unacceptable cases ranges from 5.72% to 2.54%. For all items in the file, at a 95% confidence level, between 57.67% and 54.57% were acceptable and between 7.64% and 6.08% were unacceptable.

TABLE 5. DISTRIBUTION OF RATIOS FOR TOTAL DSAA FILE

RATIO (%) RANGE	PERCENT OF RATIOS WITHIN RANGES	
	MAJOR ITEMS	ALL ITEMS
0 - 9.9	0.5	3.7
10 - 19.9	1.2	2.2
20 - 29.9	1.5	2.0
30 - 39.9	1.3	2.4
40 - 49.9	2.1	3.0
50 - 59.9	2.6	3.2
60 - 69.9	3.1	3.9
70 - 79.9	3.8	6.1
80 - 89.9	10.7	10.5
90 - 99.9	35.0	31.2
100 -109.9	31.9	24.9
110 -119.9	1.5	2.6
120 -129.9	1.3	1.3
130 -139.9	0.3	0.8
140 -149.9	0.2	0.5
150 -159.9	0.2	0.4
160 -169.9		0.3
170 -179.9	0.2	0.1
180 -189.9		0.2
190 -199.9	0.2	0.1
Over 200.0	0.3	0.6
Highest Ratio	328.12%	1817.35%
Total Cases	605	3965
Median Ratio	98.76%	97.53%
Weighted Ratio	93.39%	70.42%
Standard Deviation of Weighted Ratio	2.6980	6.7273

Table 6 shows the correspondence between total case value and individual case ratios for major item cases (in the upper portion) and for all cases, including major item cases in the lower portion. For example, of all the major item cases, 24.01% had individual ratios between 90% and 110% and a case value between $10,000 and $99,999. Also, the greater proportion of cases within the individual ratio ranges had a value between $10,000 and $99,999.

TABLE 6. DISTRIBUTION OF DSAA CASES BY INDIVIDUAL RATIOS WITHIN FINAL PRICE RANGES

INDIVIDUAL RATIO RANGES	FINAL PRICE RANGES					
	$0-999	$1,000-9,999	$10,000-99,999	$100,000-999,999	Over One Million $	Total Percent
Major Item Cases						
0 - 89.99%	1.49	7.62	11.26	7.28	1.32	28.97
90 - 109.99%	3.97	14.90	24.01	19.21	4.80	66.89
Over 110%	0.50	1.32	1.49	0.66	0.17	4.14
Total Percent	5.96	23.84	36.76	27.15	6.29	100.00
All Cases						
0 - 89.99%	2.85	9.51	14.22	8.47	1.97	37.02
90 - 109.99%	10.19	17.37	17.83	9.25	1.49	56.13
Over 110%	1.13	2.72	2.24	0.71	0.05	6.85
Total Percent	14.17	29.60	34.29	18.43	3.51	100.00

5. Summary of Analyses: The data indicates that the majority of the initial price estimates are at or over the final price charged FMS customers. The weighted ratios for the four sets of data are summarized below in Tables 7 through 9.

TABLE 7. SUMMARY OF DATA RATIOS

WEIGHTED RATIOS				
			USASAC	
	DSAA	SAAC	CASE DATA	DATA BASE DATA
MAJOR ITEMS	93.39	96.63	99.17%	98.19%
ALL ITEMS	70.42	97.58		

TABLE 8. SUMMARY OF CASES OR CASE LINES WITH A RATIO UNDER 110%

PERCENT OF WEIGHTED RATIOS UNDER 110%				
			USASAC	
	DSAA	SAAC	CASE DATA	DATA BASE DATA
MAJOR ITEMS	95.86	86.50	79.50%	91.9%
ALL ITEMS	93.15	83.30		

TABLE 9. SUMMARY OF CASES AND CASE LINES WITH RATIOS BETWEEN 90% AND 110%

PERCENT OF CASES WITH RATIOS BETWEEN 90% AND 110%				
			USASAC	
	DSAA	SAAC	CASE DATA	DATA BASE DATA
MAJOR ITEMS	66.90	63.80	68.50%	73.00%
ALL ITEMS	56.10	52.50		

The percent of the cases in the samples which had estimates within the acceptable region (weighted ratio ranging from 90% to 100%) and which were clearly unacceptable (weighted ratio > 110%) are shown

in Table 10. Over all the data investigated, at a 95% confidence level, between 87.27% and 51.03% of cases or case lines fell within the acceptable region and between 31.11% and 0.0% fell within the clearly unacceptable region. For major items only the percent within the acceptable region ranged from 87.27% to 56.13% and the percent in the unacceptable region ranged from 31.11% to 0.00%. Other analyses performed to determine if there was a relationship between the ratio and other case factors did not produce any significant results. The results are summarized below and details of the analyses may be seen in Appendix D.

TABLE 10. PERCENT OF CASES OR CASE LINES IN ACCEPTABLE AND UNACCEPTABLE REGIONS (95% CONFIDENCE LEVEL)

DATA SOURCE	PERCENT OF CASES OR CASE LINES	
	ACCEPTABLE REGION 110% > WR > 90%	UNACCEPTABLE REGION WR > 110%
DSAA Major Items	70.68 - 63.20	5.72 - 2.54
SAAC Major Items	67.30 - 60.26	15.94 - 10.92
USASAC --		
Case Data-Major Items	87.27 - 58.66	16.91 - 0.00
Data Base Data - Major Items	80.91 - 56.13	31.11 - 9.63
DSAA All Items	57.67 - 54.57	7.64 - 6.08
SAAC All Items	54.07 - 51.03	18.26 - 15.94

a. For MSC ratios, the DSAA and SAAC data produced conflicting results as can be seen in Table 11.

TABLE 11. COMPARISON OF DSAA AND SAAC DATA ANALYZED BY MSC

MSC	PERCENT OF DSAA CASES		MSC RATIOS		DIFFERENCE
	UNDER 110%	90% TO 110%	DSAA	SAAC	SAAC-DSAA
TACOM	98.51	43.28	95.50	96.07	0.57
MICOM	100.00	60.71	76.81	98.32	21.51
ARRCOM	95.79	72.63	93.43	93.64	0.21
GMPA	93.48	60.87	85.66	82.08	-3.58
CECOM	92.31	50.00	70.66	100.30	29.64
TSARCOM	100.00	90.48	98.62	100.11	1.49

Except in one instance, SAAC data showed higher ratios than DSAA data for all MSCs.

b. The country-ratio relationship produced no discernible pattern.

c. For both DSAA and SAAC data, the weighted ratios have been improving since 1979. This increase in ratio for all sample cases could be an indication of increasing emphasis on the accuracy of the price estimates.

d. The analysis by case closure date showed some consistency for DSAA and SAAC data in that cases closed in 1981 had a higher ratio than for 1980 or 1982, but the significance of this is not known.

e. No clear relationship exists between unit price and ratio. Over 80% of the SAAC case line items were priced at $10,000 or less.

f. The same analysis as in paragraph e above for case line costs did not show a definite break point. Under-pricing

appears to occur primarily among case lines costing $10,000.00 or less. Over 70% of the SAAC case lines were priced at $100,000 or less.

g. Case duration appears to have an impact on the ratio. The greater the duration, the lower the ratio. This cannot be explained unless the difficulty of projecting inflation more than one year in the future coupled with the mandated use of the low OSD inflation indices may have caused MSC personnel to over compensate with higher initial estimates for cases with expected long duration. Over 70% of the cases were completed in 3 years or less.

h. There is a statistical difference between the ratios for classified and unclassified cases. The small sample of classified cases showed a weighted ratio of 97.99% compared to 70.42% for all unclassified cases. The median individual ratio, however, was much closer, 99.98% for classified compared to 97.53 for unclassified. Presumably the classified cases would be monitored more closely than the unclassified cases. Classified cases were not included in the DSAA, SAAC, or USASAC data. The findings would not change perceptibly if classified data had been included since only 0.6% of the DSAA cases were classified.

6. <u>High Difference Cases</u>: It was a matter of interest to establish the reasons for the large differences between the estimate and final price seen in the above sections. This type of work had recently been performed by USASAC-O (Ref 12) and their findings are synopsized here.

a. The USASAC-O research investigated 29 cases that had experienced at least a 10% difference (Ratio >110% or <90%) and or other price related problems. Retired or rescinded cases were not considered nor were those where price problems arose because of transportation costs. The cases in the sample were discussed with responsible MSC personnel to determine the reasons for the differences. The reasons fell into 9 categories (factors). For each case a prime reason (category) and a secondary or contributing reason were determined. Factor-Comparison matrices were used to analyze the frequency and relative importance of the factors for the cases. Table 12 shows the factors and their incidence by MSC.

TABLE 12. SUMMARY MATRIX OF CAUSES OF PRICING VARIANCES

MRCs	NOT AN EOQ	TIME LAG	INFLATION	PRODUCER PROBLEMS	AMDF USED ITEM NOT ACTIVE	CONFIGURATION CHANGE	CUSTOMER PECULIAR REQUIREMENT	SUPPLY SOURCE CHANGE	PRICING ERROR OMISSION	TOTAL
ARRCOM										27
PRIME	0	2	1	1	1	1	0	3	2	11
SECONDARY	0	1	7	1	3	1	2	1	0	16
CECOM										14
PRIME	1	0	0	1	2	0	0	0	1	5
SECONDARY	0	2	4	0	0	0	0	2	1	9
MICOM										12
PRIME	0	1	4	1	1	0	0	0	1	8
SECONDARY	0	0	4	0	0	0	0	0	0	4
TACOM										15
PRIME	2	0	0	1	0	0	1	0	0	4
SECONDARY	1	4	2	1	0	0	2	1	0	11
TSARCOM										3
PRIME	0	0	0	0	0	0	0	1	0	1
SECONDARY	0	0	1	0	1	0	0	0	0	2
TOTAL	4	10	23	6	8	2	5	8	5	71
PRIME	3	3	5	4	4	1	1	4	4	29
SECONDARY	1	7	18	2	4	1	4	4	1	42

b. The ranking and frequency of the factors may be seen in Table 13.

TABLE 13. VARIANCE FACTOR RANKING

FACTOR RANKING	VARIANCE FACTOR	PRIME FREQ	%	SECONDARY FREQ	%	OVERALL FREQ	%
1	Inflation	5	17.2	18	42.8	23	32.4
2	Time Lag	3	10.3	7	16.4	10	14.1
3	Supply Source Change	4	13.8	4	9.5	8	11.3
4	AMDF Used	4	13.8	4	9.5	8	11.3
5	Producer Problems	4	13.8	2	8.4	6	8.4
6	Pricing Error/Omission	4	13.8	1	2.4	5	7.0
7	Customer Peculiar Req	1	3.5	4	9.5	5	7.0
8	Not an EOQ	3	10.3	1	2.4	4	5.6
9	Configuration Change	1	3.5	1	2.4	2	2.8

c. Inflation appeared to be the dominant factor but further analysis indicated that it was generally not the problem that originated the difference. It became a cause as a result of some other factor creating a time delay necessitating the use of inflation indices. For this reason, the factor "time lag" became dominant.

7. Work by Snow and Izzi: In 1975 Snow and Izzi of the Logistics Studies Office (Ref 1) performed a price variance analysis of 280 cases, randomly selecting one identifiable line item from each case for unit price analysis. They found that overall, the initial price estimates were slightly lower (weighted ratio of 102%) than the final billed price, but still within the $\pm$ 10% limit. Table 14 illustrates their findings.

TABLE 14. RATIOS RESULTING FROM WORK BY SNOW AND IZZI

MATERIEL CATEGORY	COMMODITY COMMAND	WEIGHTED RATIO
AMMUNITION	ARRCOM	98%
WEAPONS	ARRCOM	105%
ENGINEER EQPMT	TSARCOM	98%
AIRCRAFT	TSARCOM	100%
MISSILES	MICOM	101%
ELECTRONICS	CECOM	103%
TANK/AUTOMOTIVE	TACOM	106%
	TOTAL	102%

VII. Findings and Conclusions.

A. The FMS prices estimated by the MSCs can and are being improved. There is a limit to the improvements that can be made to the estimating process under the existing regulatory and legal constraints. The following improvements, some of which are being implemented by individual subordinate commands will insure better estimates.

1. Automation of the estimating process will eliminate most of the mathematical errors that still occur and will standardize the process and increase the objectivity of the estimates. Management reports from the systems will provide visibility of cases as they are developed and executed.

2. Indexing is used as necessary in the estimating process. Historic indices, used to bring an old price up to date appear to be adequate. However, the OSD inflation indices that

the MSCs are mandated to use for price projections are not realistic. More realistic inflation indices should be developed and disseminated by HQ DARCOM.

3. The Special Defense Acquisition Fund (SDAF) should increase the responsiveness and improve price estimates on some of the foreign customer high demand items.

4. Price estimates could be improved if potential producers could be contacted legally for firm price estimates. The Army Procurement Pamphlet (APP) and Defense Acquisition Regulation (DAR) must be modified to accommodate this approach.

5. Quoting a fixed price to those customers who requested to do business in this way would insure accurate price estimates for these cases.

6. The management reserve concept has merit in those cases where the initial price estimate is known to have a high degree of uncertainty. The advantages of this concept for both the customer and the USG, outweigh the disadvantages.

7. The analysis of recently closed cases indicated that in a majority of major item cases (over 60%) the final price is between 90% and 110% of the estimated price and that in over 85% of the cases the estimates are under 110% of the final price.

VIII. Recommendations.

A. The Foreign Military Sales process should be automated at all MSCs.

B. DARCOM seek approval to use inflation indices that are more realistic than the currently mandated OSD indices.

C. The DAR must be amended to permit MSCs to solicit firm prices from contractors.

D. Customers should be given the option of a fixed price on the items they wish to purchase.

E. A Management Reserve should be used for those case lines where little or no historic pricing information is available.

F. USASAC-M be charged with preparing a quarterly performance report based on the ratio of final price to originally quoted price to keep abreast of MSC and total Army estimating performance.

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APPENDIX A

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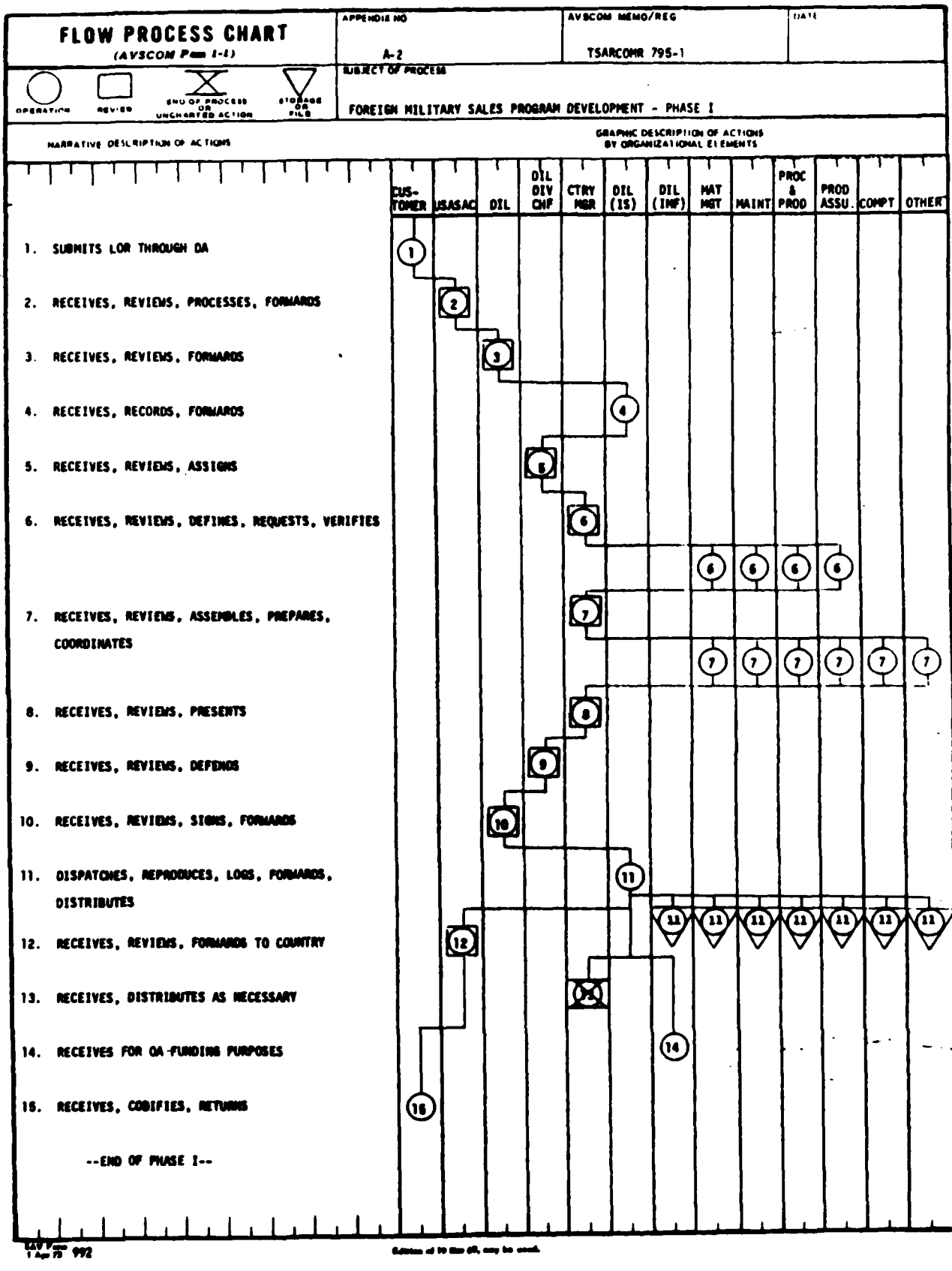
APPENDIX B

CASE DEVELOPMENT PHASE

Foreign Military Sales Program Development

in TSARCOM, Development Phase *

* TSARCOM Regulation 795-1, International Logistics Program, August 1980


FLOW PROCESS CHART
(AVSCOM Pam 1-1)
APPENDIX NO
A-2
AVSCOM MEMO/REG
TSARCOMR 795-1
DATE
OPERATION
REVIEW
END OF PROCESS OR UNCHARTED ACTION
STORAGE OR FILE
SUBJECT OF PROCESS
FOREIGN MILITARY SALES PROGRAM DEVELOPMENT - PHASE I
NARRATIVE DESCRIPTION OF ACTIONS
GRAPHIC DESCRIPTION OF ACTIONS BY ORGANIZATIONAL ELEMENTS
CUS-TOMER
USASAC
DIL
DIL DIV CHF
CTRY MGR
DIL (IS)
DIL (INF)
MAT MGT
MAINT
PROC & PROD
PROD ASSU.
COMPT
OTHER
1. SUBMITS LOR THROUGH DA
2. RECEIVES, REVIEWS, PROCESSES, FORWARDS
3. RECEIVES, REVIEWS, FORWARDS
4. RECEIVES, RECORDS, FORWARDS
5. RECEIVES, REVIEWS, ASSIGNS
6. RECEIVES, REVIEWS, DEFINES, REQUESTS, VERIFIES
7. RECEIVES, REVIEWS, ASSEMBLES, PREPARES, COORDINATES
8. RECEIVES, REVIEWS, PRESENTS
9. RECEIVES, REVIEWS, DEFENDS
10. RECEIVES, REVIEWS, SIGNS, FORWARDS
11. DISPATCHES, REPRODUCES, LOGS, FORWARDS, DISTRIBUTES
12. RECEIVES, REVIEWS, FORWARDS TO COUNTRY
13. RECEIVES, DISTRIBUTES AS NECESSARY
14. RECEIVES FOR OA-FUNDING PURPOSES
15. RECEIVES, CODIFIES, RETURNS
--END OF PHASE I--

Foreign Military Sales Program Development

in TSARCOM, Execution Phase *

* TSARCOM Regulation 795-1

FLOW PROCESS CHART

(AVSCOM Pam 1-1)

APPENDIX NO	AVSCOM MEMO/REG	DATE
A-3	TSARCOMR 795-1	

OPERATION | REVIEW | END OF PROCESS OR UNCHARTED ACTION | STORAGE OR FILE

SUBJECT OF PROCESS

LETTER OF OFFER AND ACCEPTANCE -- PHASE II (ACCEPTANCE THROUGH IMPLEMENTATION)

NARRATIVE DESCRIPTION OF ACTIONS

GRAPHIC DESCRIPTION OF ACTIONS BY ORGANIZATIONAL ELEMENTS

CUS-TOMER	USASAC	DIL	DIL DIV CHF	CTRY MGR	DIL (IS)	DIL (IMF)	MAT MGT	PROC & PROD	PROD ASSU.	COMPT	MTN	OTHER

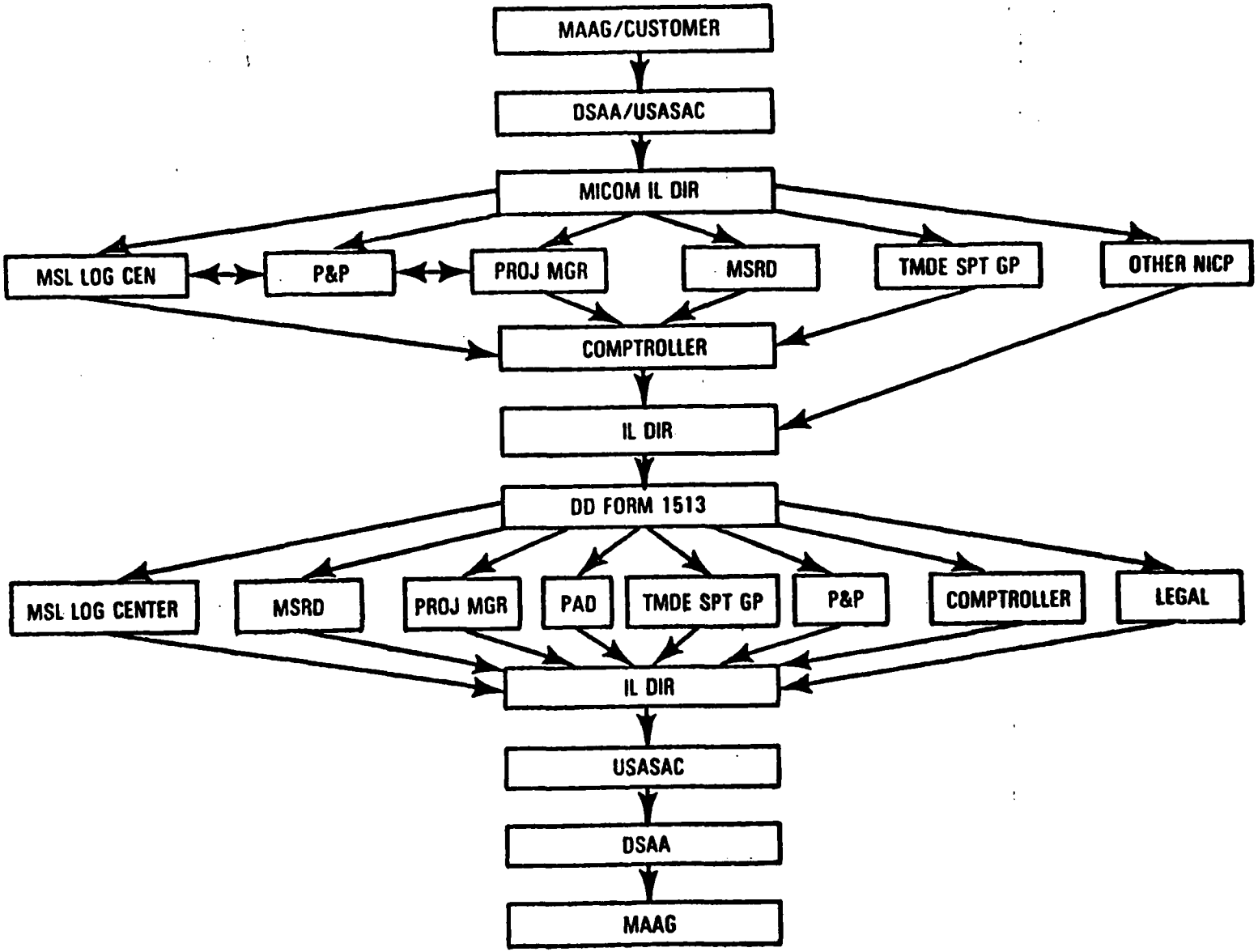
1. RECEIVES LOA, REVIEWS, PROCESSES, FORWARDS
2. RECEIVES, REVIEWS, MODIFIES, CODIFIES, RETURNS
3. RECEIVES, REVIEWS, VERIFIES, ENTER TO ACOCS SYSTEM, FORWARDS
4. RECEIVES, PROCESSES, FORWARDS
5. RECEIVES, RECORDS, FORWARDS
6. RECEIVES, REVIEWS, ASSIGNS
7. RECEIVES, REVIEWS, REVISES, AMENDS, NOTIFIES, ADMINISTERS
8. DISTRIBUTES AS INFORMATION
9. DEFINES SPECIFICATIONS, PREPARES DETAILS, REQUESTS PWD
10. REVIEWS, ADJUSTS, RETURNS
11. RETURNS, TAKES ACTION, REVISES, FORWARDS
12. RECEIVES, PREPARES, COORDINATES — RPO
13. RECEIVES, REVIEWS, PROCESSES, FORWARDS PWD FOR CONTRACT ACTION
14. INTERPRETS PWD, PREPARES DEFINITIZED CONTRACT, MEETS, DISCUSSES, OBTAINS APPROVAL
15. AWARDS CONTRACT — REVIEW BOARD

--END OF PHASE II--

Case Development and Execution at MICOM *

* Foreign Military Sales Pricing Symposium, MICOM, 8-10 December 1980

DEVELOPMENT OF A LETTER OF OFFER



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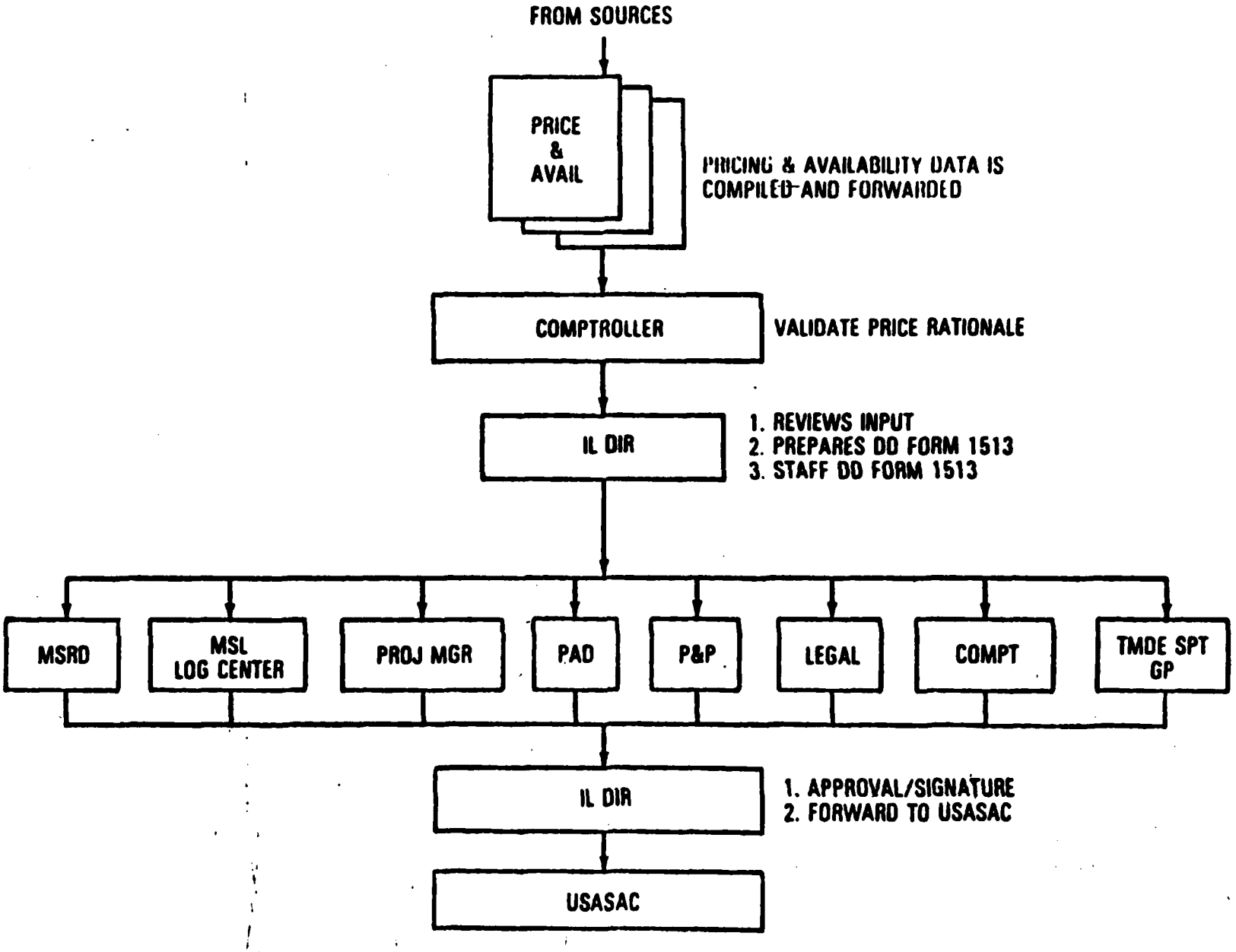

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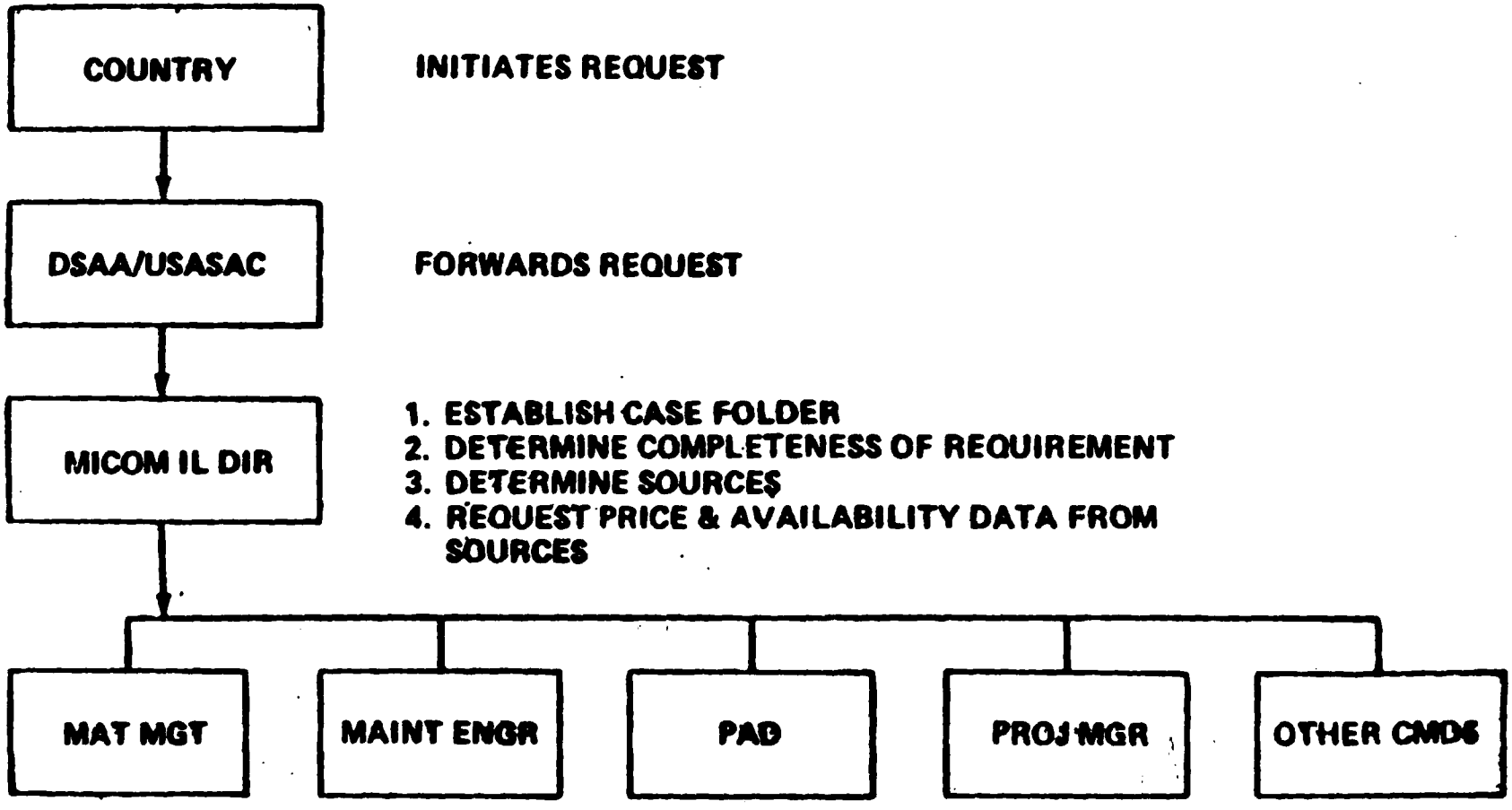

ABOVE SOURCES INTERFACE WITH P&P DIR, AMCC, DEPOTS, ETC.

MANAGEMENT of ACCEPTED FMS CASE

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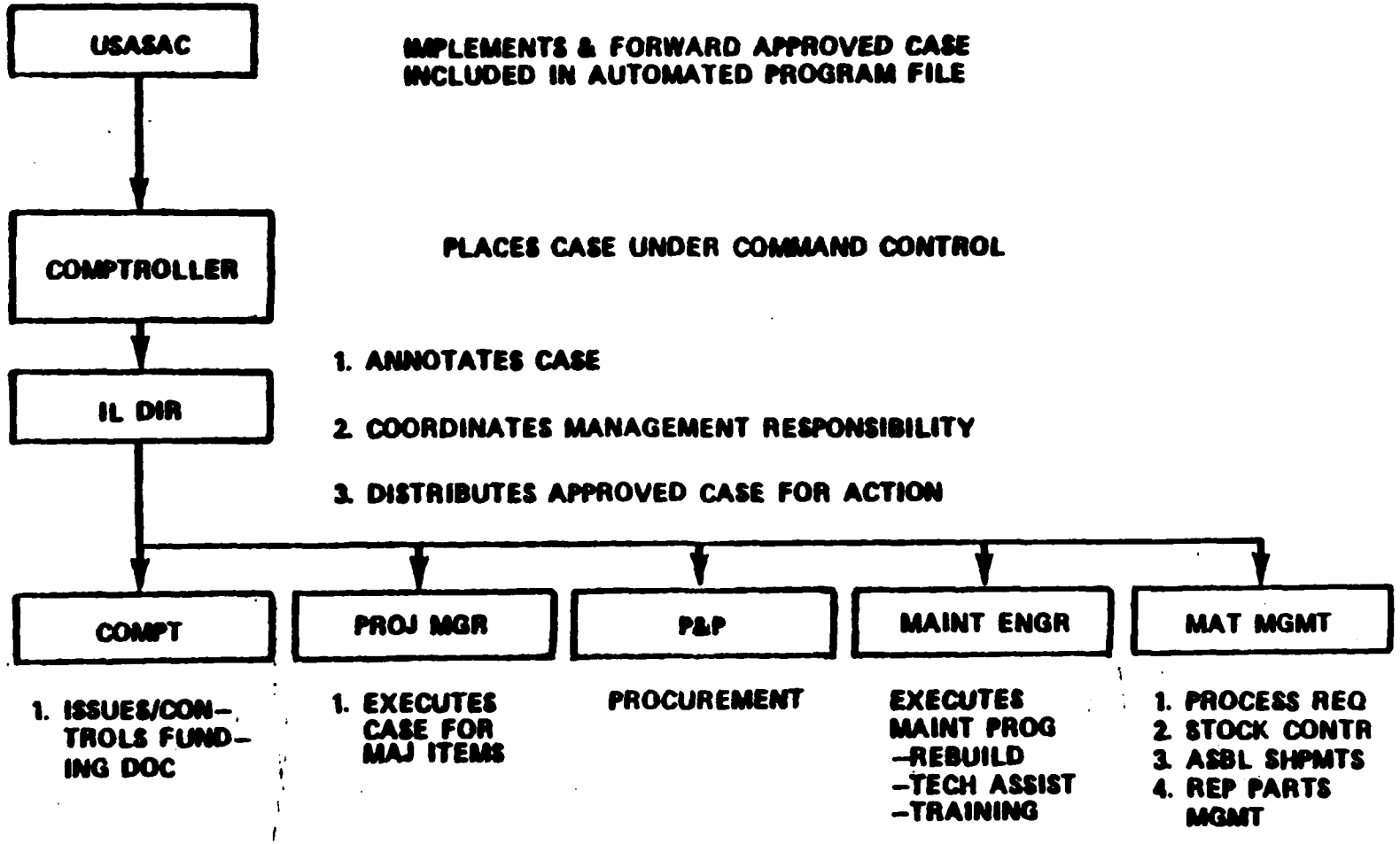
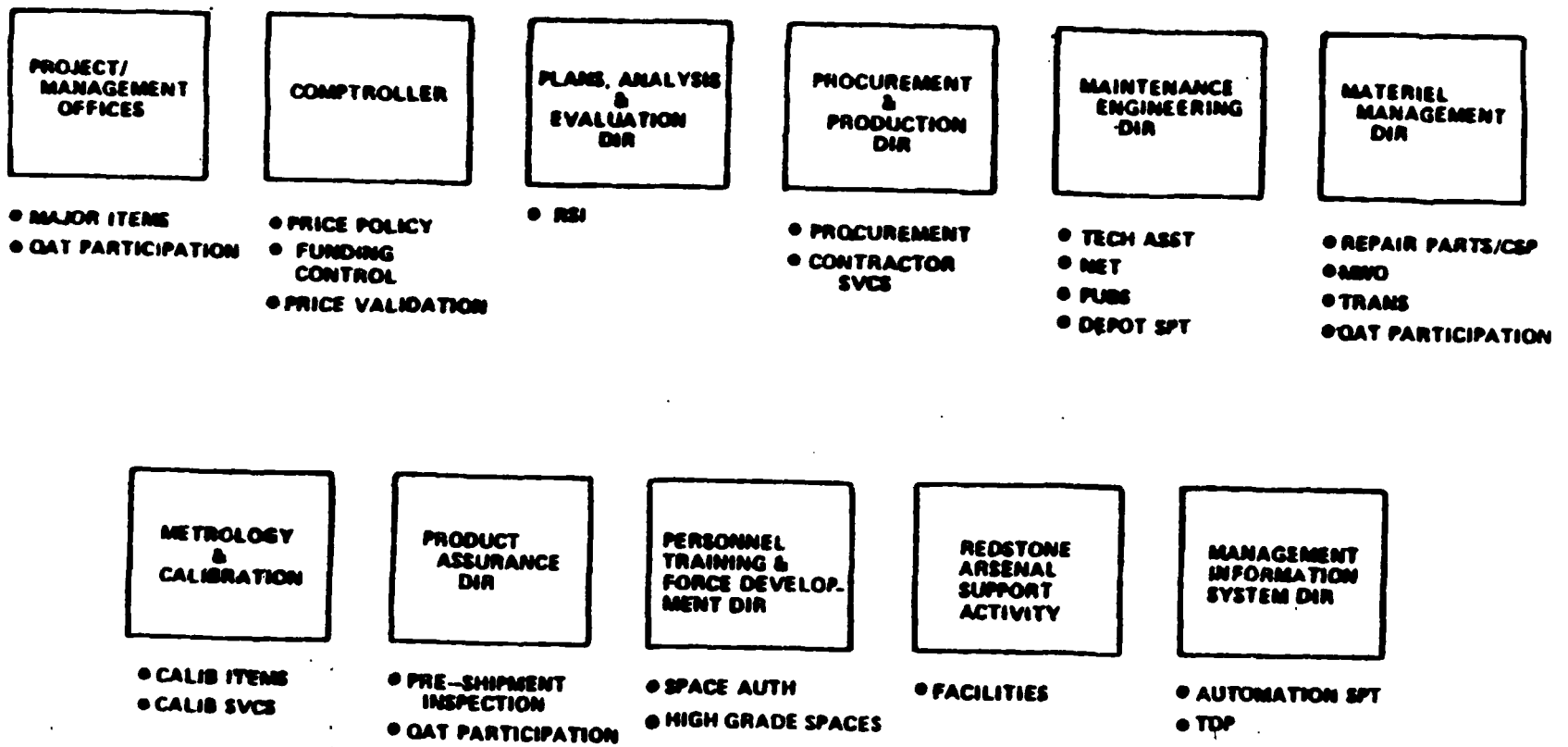


MICOM FMS PLAYERS



Generalized Process Flow, in detail *

* DARCOM Pamphlet 12-2

SECURITY ASSISTANCE PROGRAMS

FOREIGN MILITARY SALES

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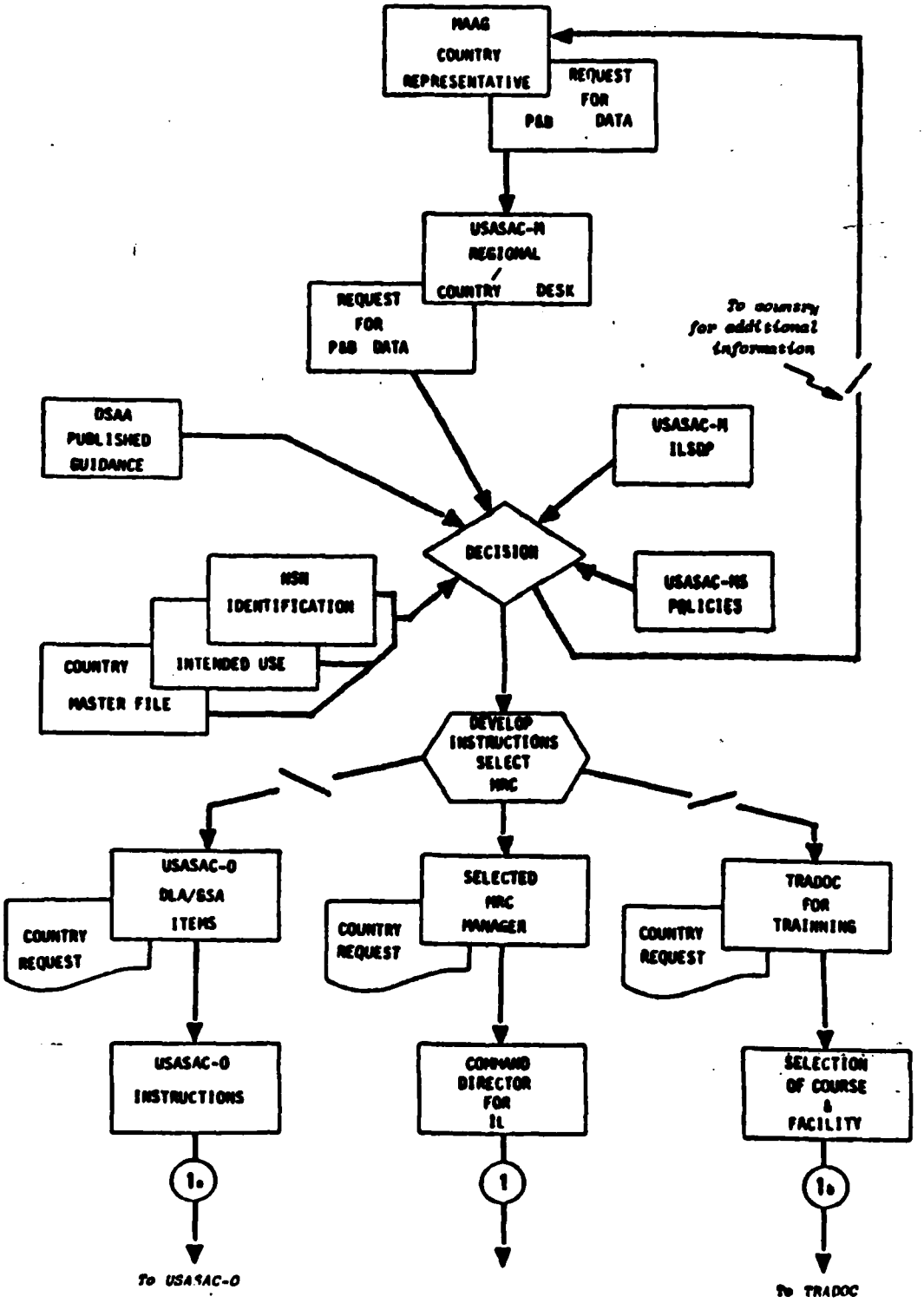
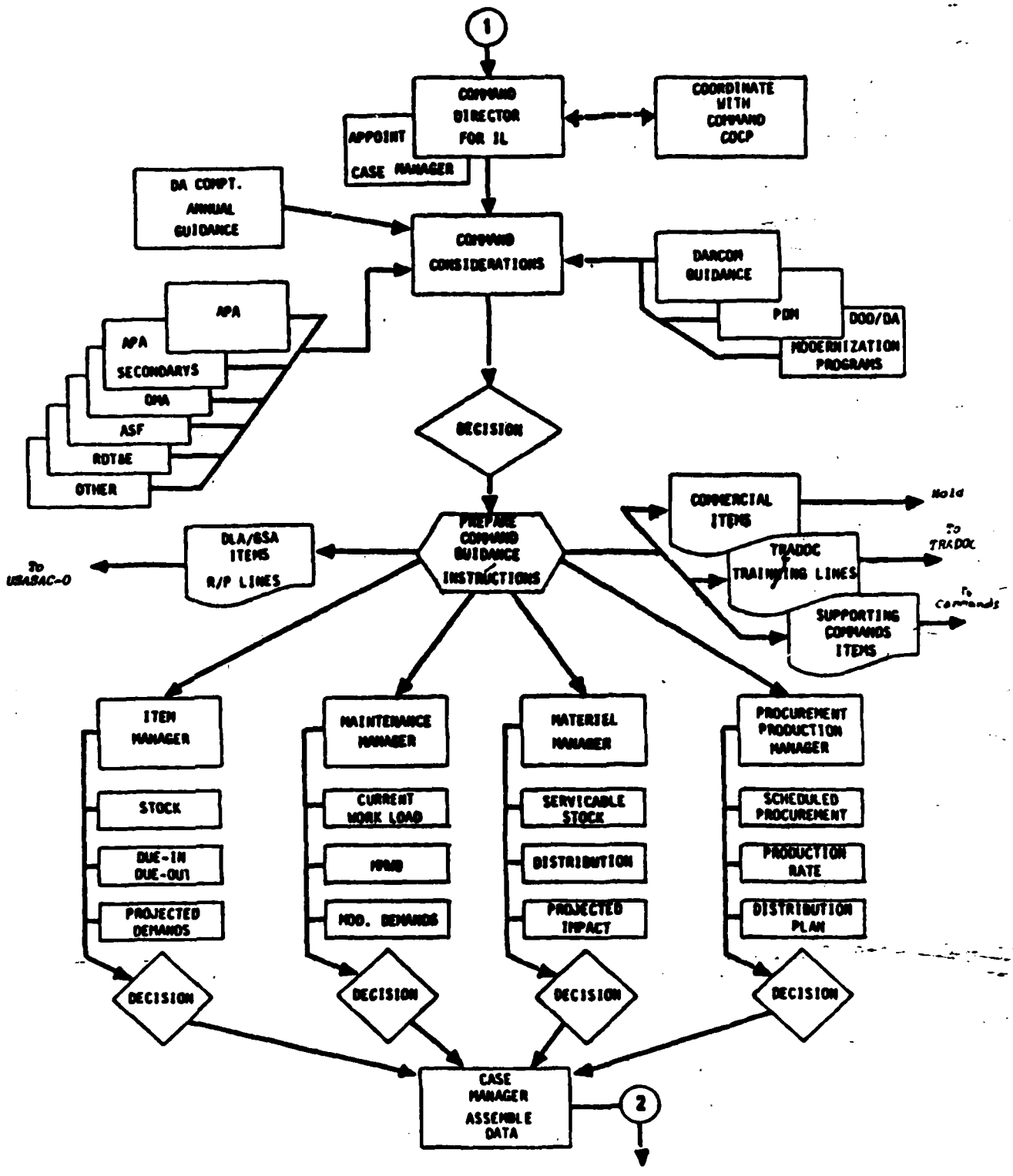


SECURITY ASSISTANCE PROGRAMS

FOREIGN MILITARY SALES

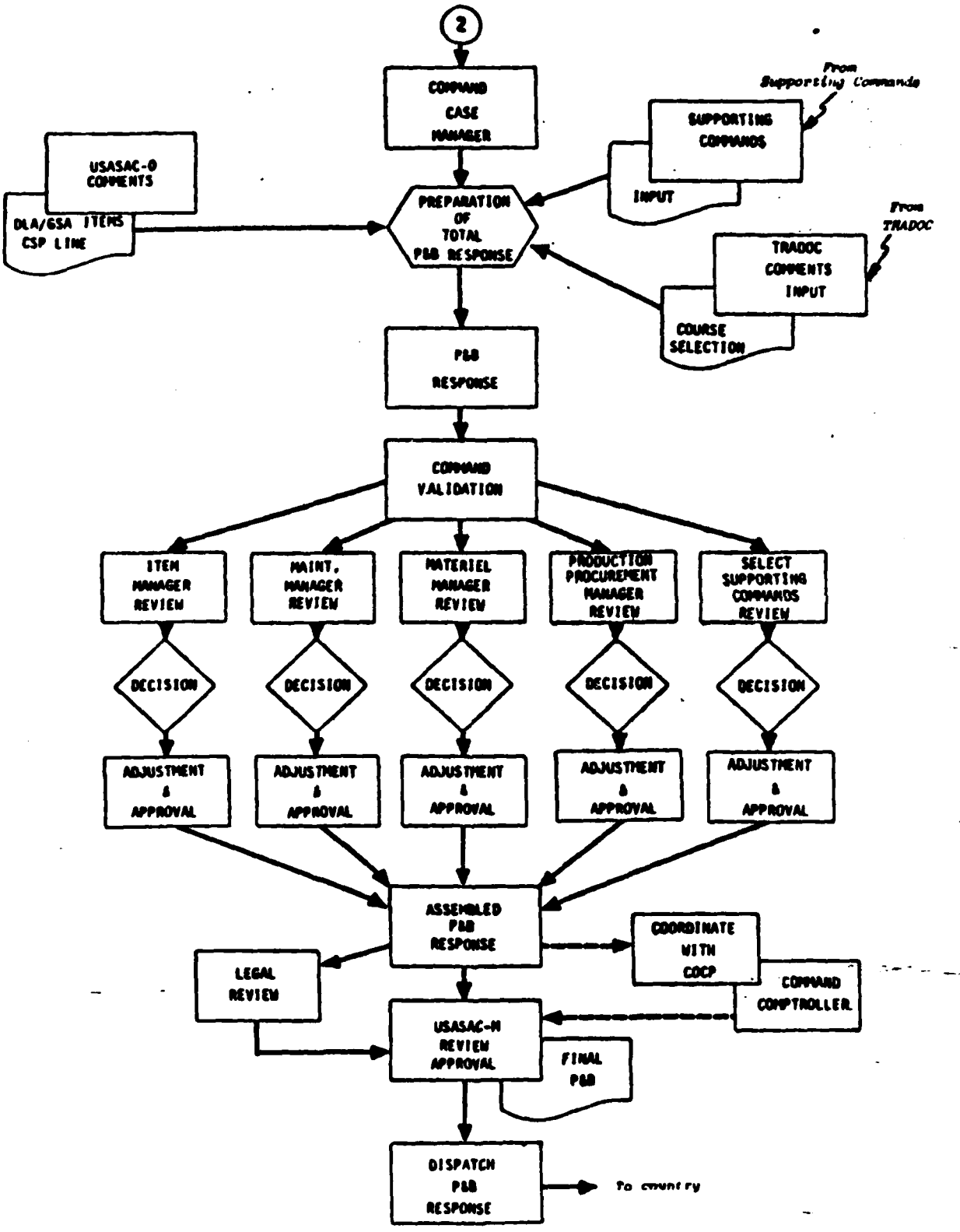
PLANNING AND BUDGETING ESTIMATES (P AND B)



SECURITY ASSISTANCE PROGRAMS

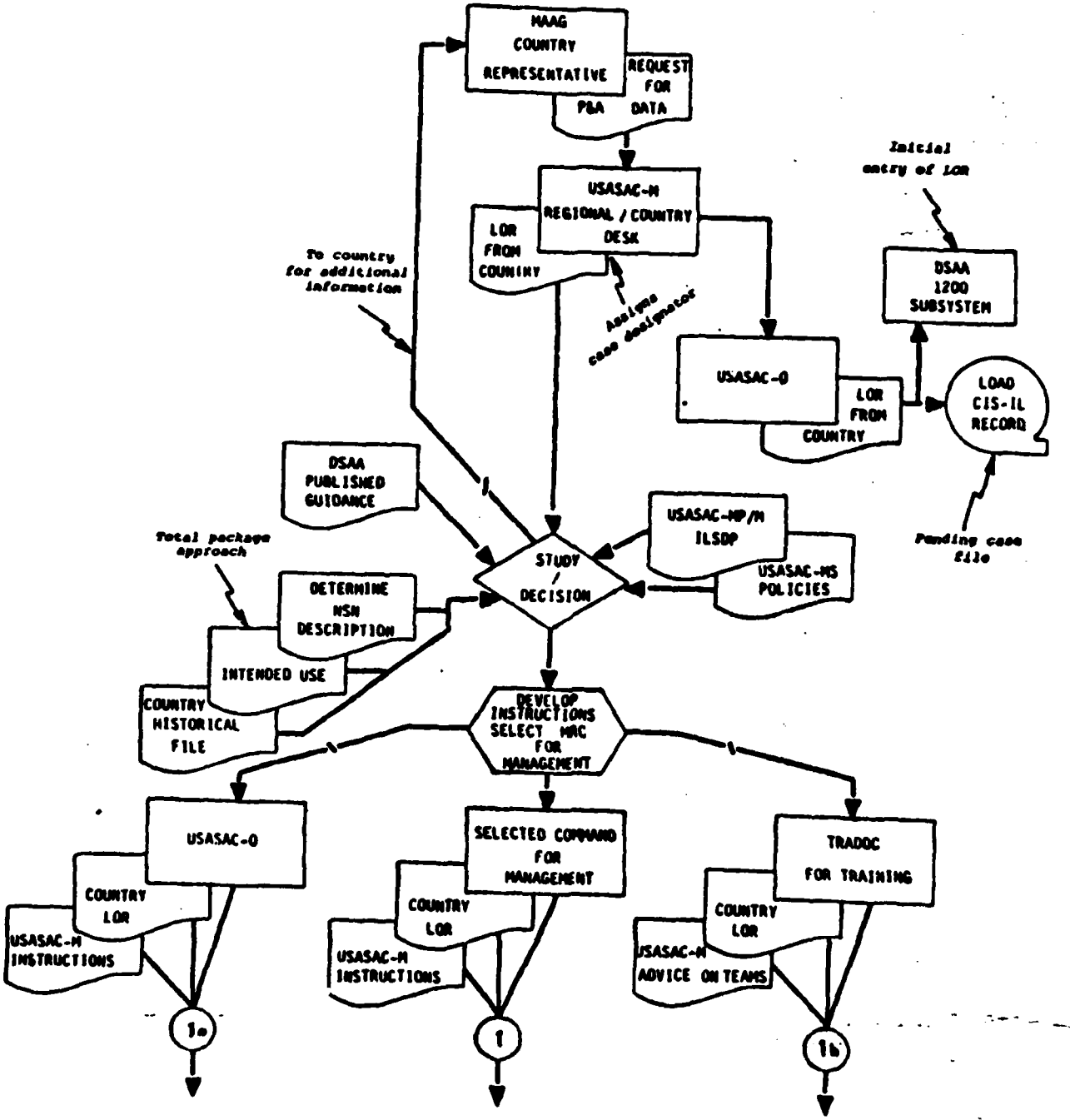
FOREIGN MILITARY SALES

PLANNING AND BUDGETING ESTIMATES



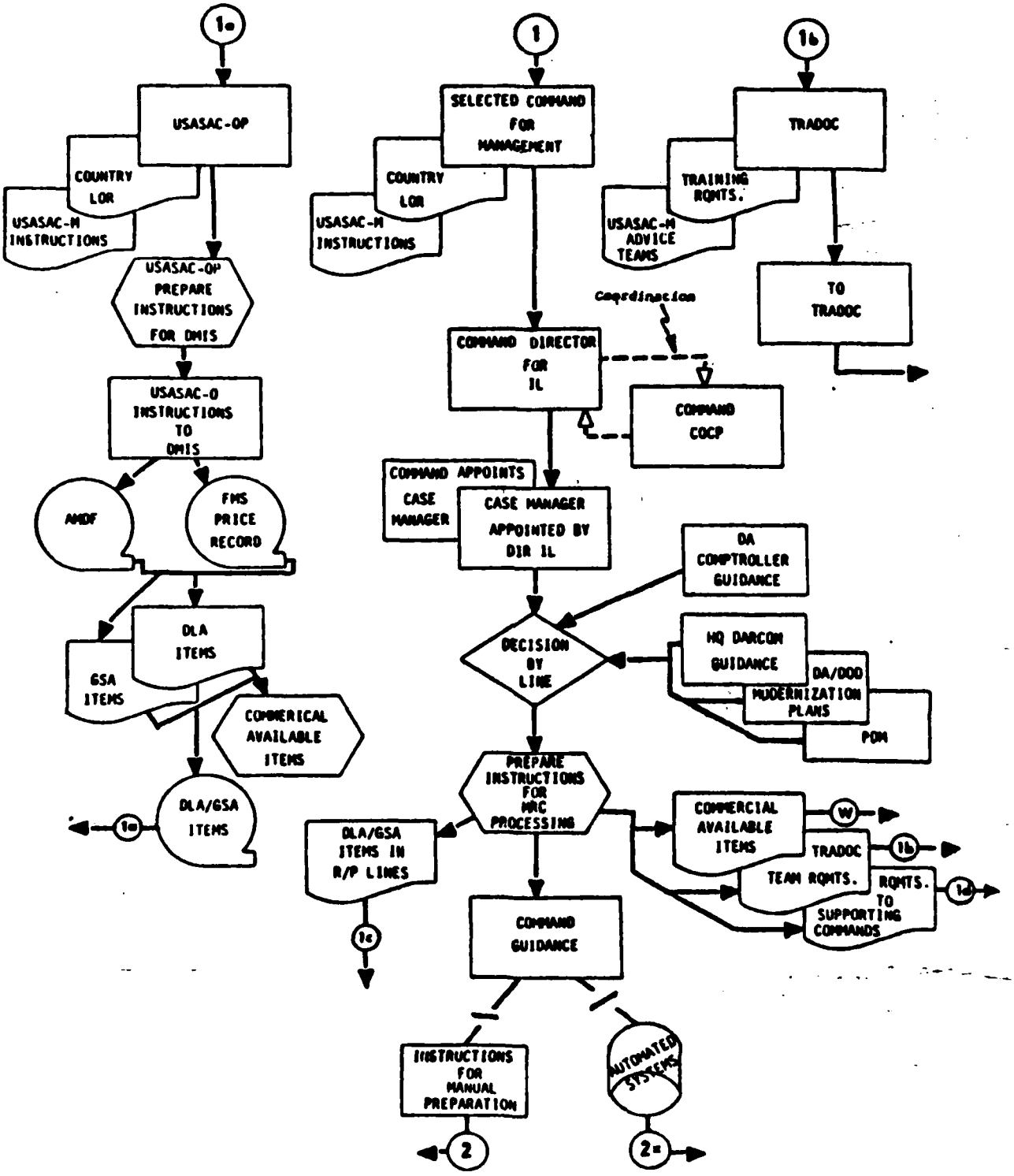
SECURITY ASSISTANCE PROGRAMS
FOREIGN MILITARY SALES

REQUESTS FOR PRICE AND AVAILABILITY ESTIMATES (P AND A)



SECURITY ASSISTANCE PROGRAMS
FOREIGN MILITARY SALES

REQUESTS FOR PRICE AND AVAILABILITY ESTIMATES



SECURITY ASSISTANCE PROGRAMS
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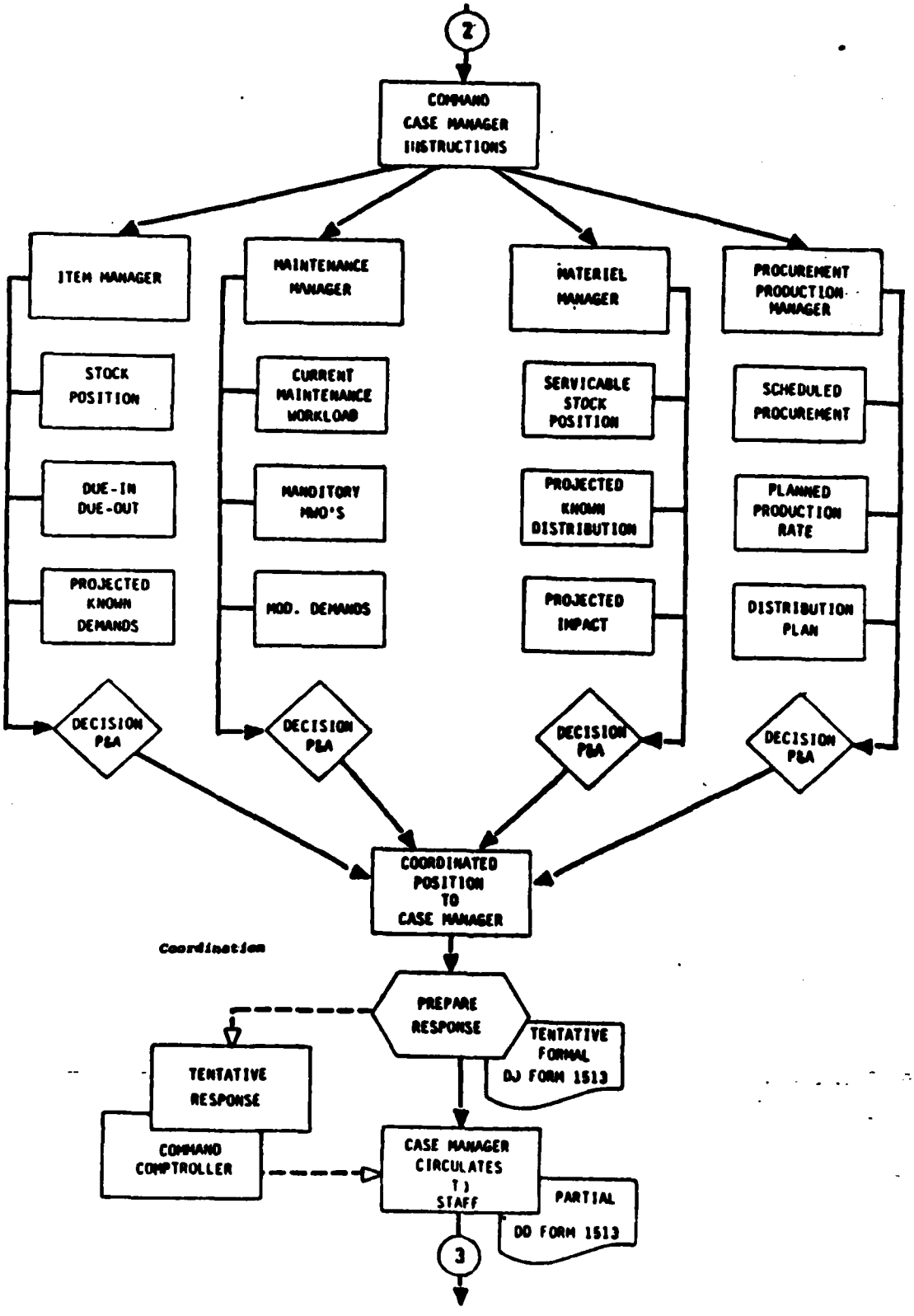
REQUESTS FOR PRICE AND AVAILABILITY ESTIMATES (P AND A)



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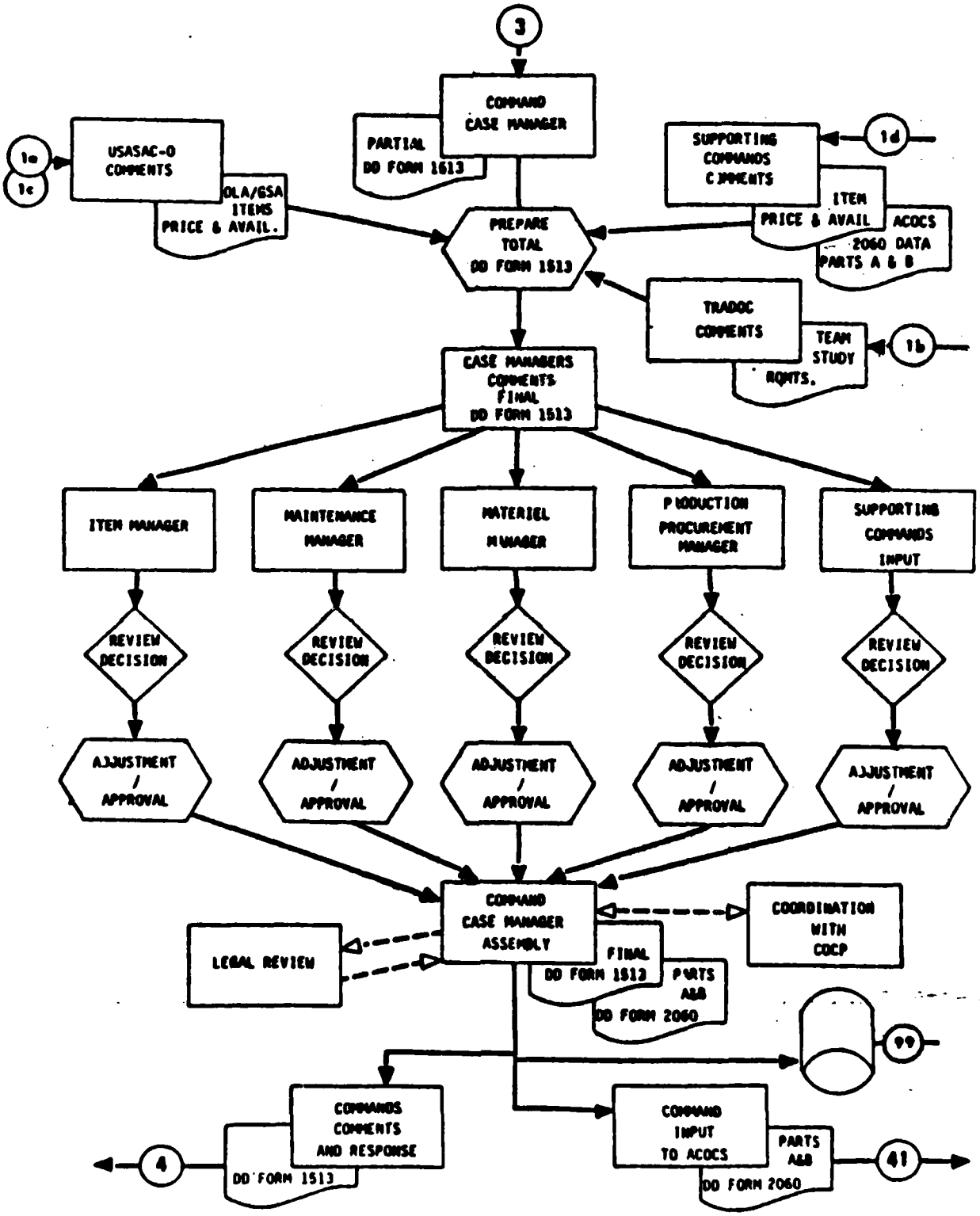
REQUESTS FOR PRICE AND AVAILABILITY ESTIMATES (P AND A)



AD-A150 676 SINGLE PRICING FOR MAJOR ITEMS IN FMS (FOREIGN MILITARY SALES)(U) LOGISTICS STUDIES OFFICE (ARMY) FORT LEE VA U R POSKUS JAN 84 2/2

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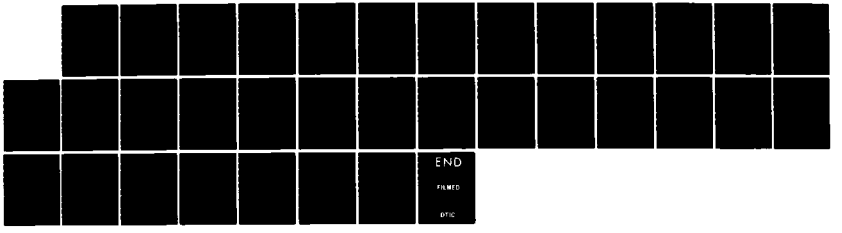

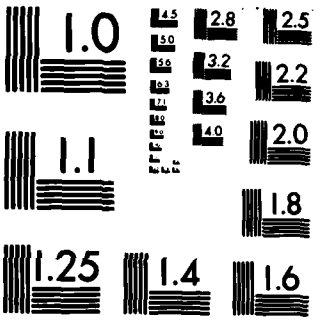

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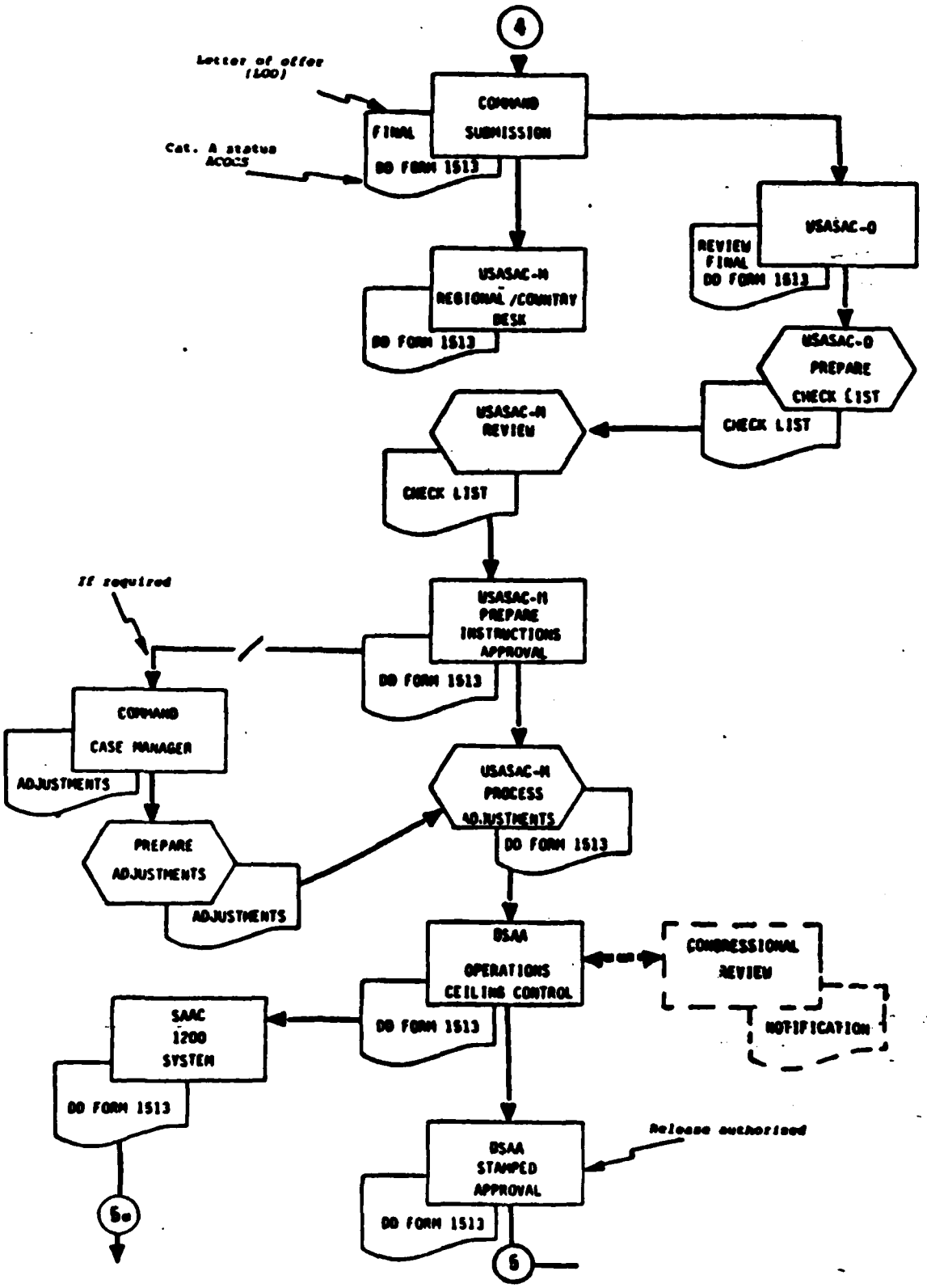
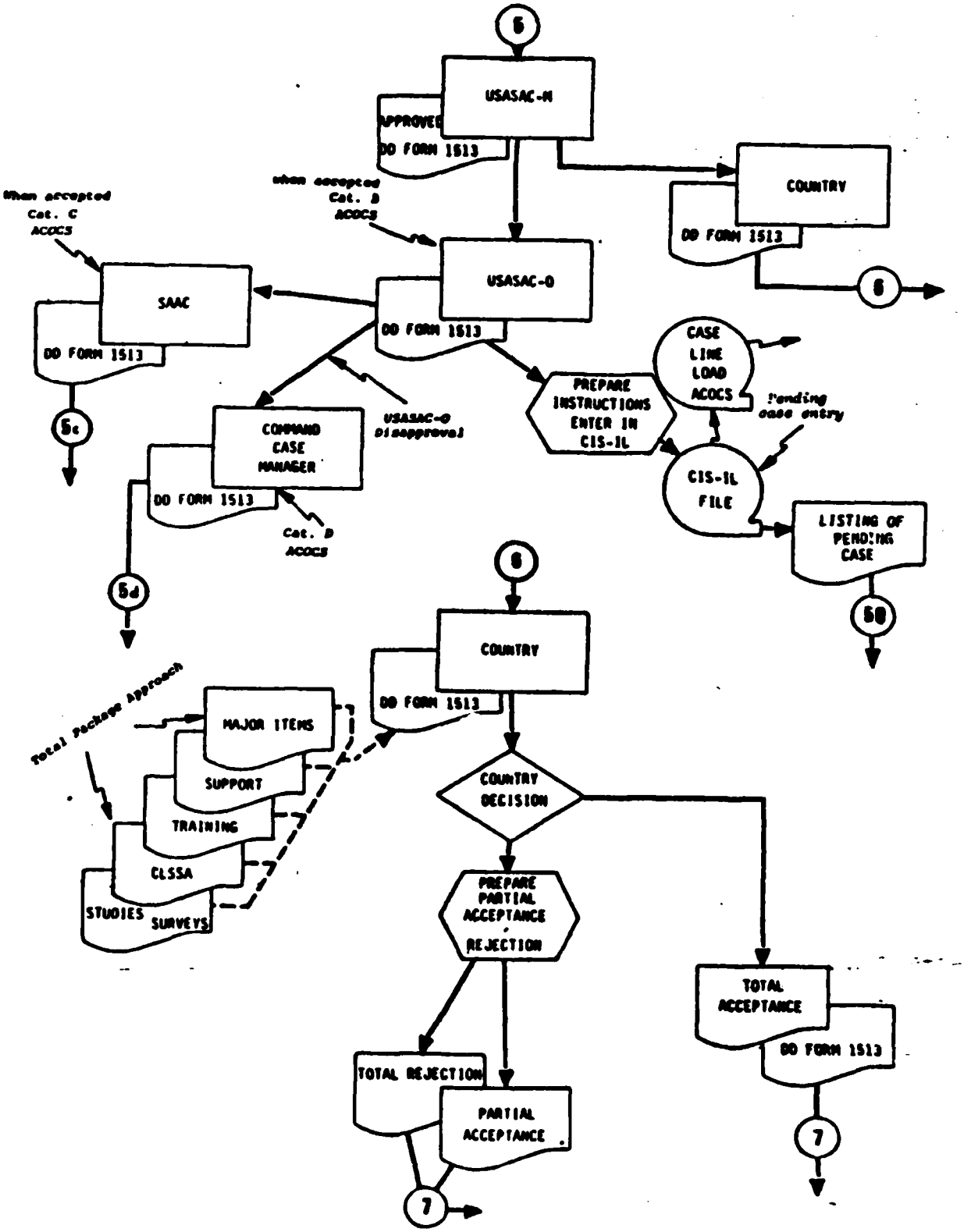
REQUESTS FOR PRICE AND AVAILABILITY ESTIMATES (P AND A)

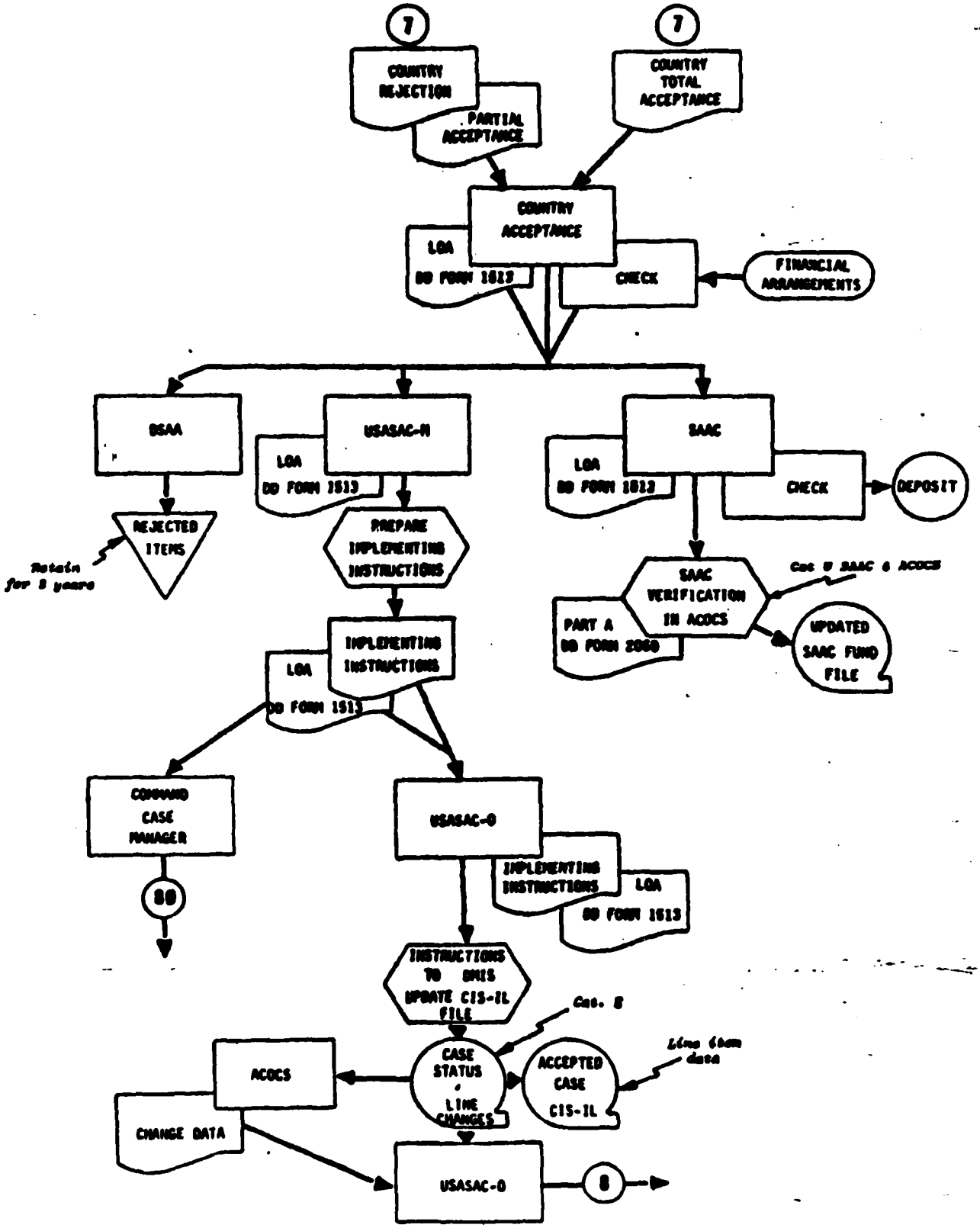


SECURITY ASSISTANCE PROGRAMS

FOREIGN MILITARY SALES

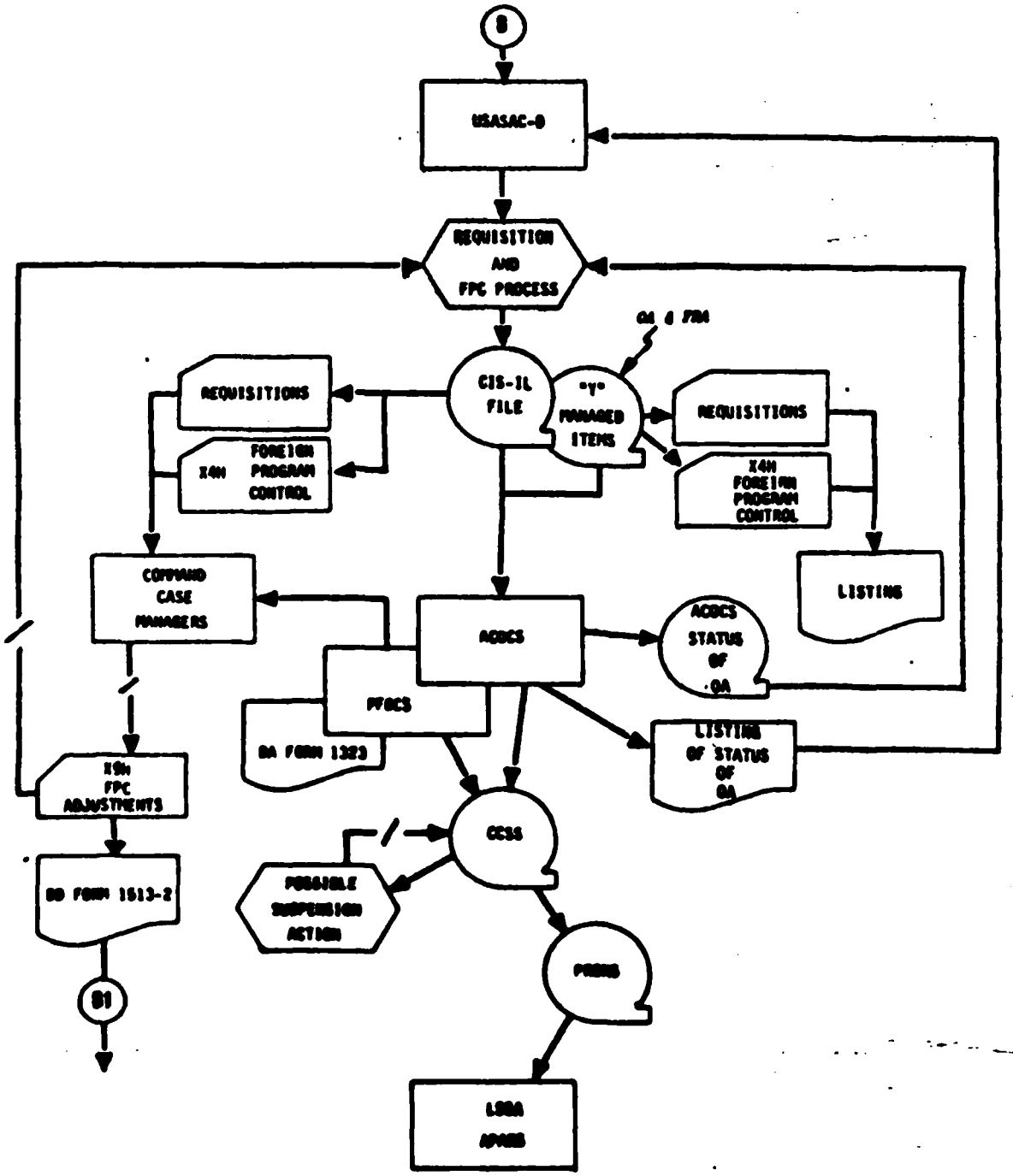


SECURITY ASSISTANCE PROGRAMS
FOREIGN MILITARY SALES
FOREIGN CUSTOMER ACCEPTANCE USASAC IMPLEMENTATION



SECURITY ASSISTANCE PROGRAMS
FOREIGN MILITARY SALES

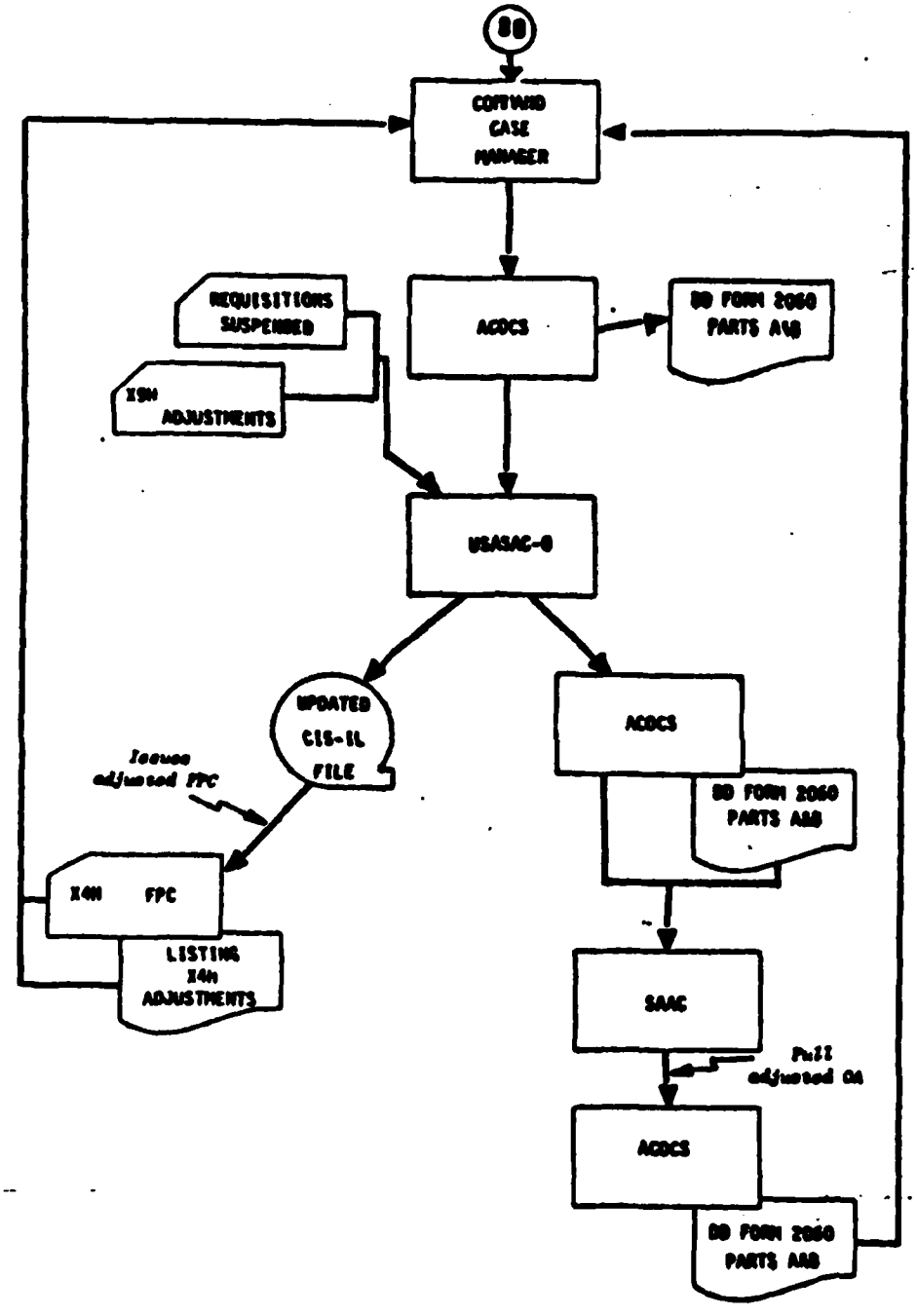
REQUISITIONING AND ISSUANCE OF FOREIGN PROGRAM CONTROL (FPC)



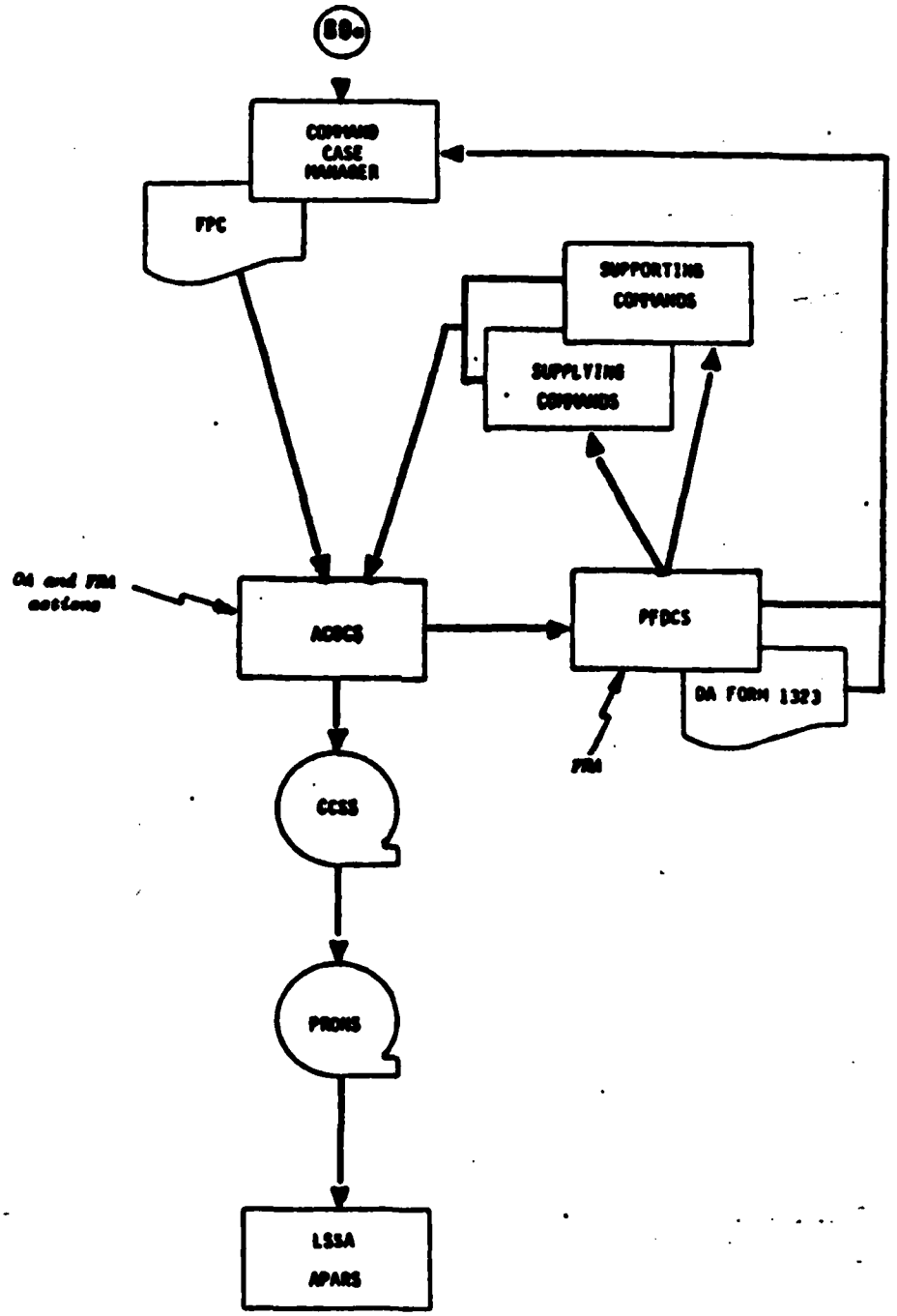
SECURITY ASSISTANCE PROGRAMS

FOREIGN MILITARY SALES

FOREIGN PROGRAM CONTROL ADJUSTMENT



SECURITY ASSISTANCE PROGRAMS
FOREIGN MILITARY SALES
SUPPORTING COMMANDS OBTAIN DA & FRA



APPENDIX C

AUDIT REPORTS

- Major Findings GAO, DAS, AAA
- Listing of Reports
- Recommendations

(Presented by Lawrence H. Martin (USAFAC)
at Army FMS Pricing Symposium, Atlanta, GA,
November 1981)

AUDIT FINDINGS

	GAO	DAS	AAA
1. TRAINING COSTS	X	X	-
2. CHARGES FOR GFM	X	X	X
3. IMPROPERLY SUBSIDIZED FMS	(X)	X	X
4. COST WAIVERS	X	-	-
5. SECONDARY ITEMS	X	X	X
6. SURCHARGES/NONRECURRING	(X)	(X)	X
7. INVENTORY LOSSES/SUPPLY PROCESS	(X)	X	X
8. LEASING	X	-	-
9. TIMELINESS OF BILLINGS	X	X	X
10. LOSSES ON STOCK FUND	(X)	-	-
11. CASE MANAGEMENT	X	(X)	X
12. CUSTOMER ORDER PROGRAM	X	X	(X)

(○) INDICATES UPCOMING REPEAT AUDIT

RECAP OF US GENERAL ACCOUNTING OFFICE REPORTS

REPORT NUMBER	TITLE	TOTAL DOLLAR DEFICIENCY (MILLIONS)	TOTAL ARMY DOLLAR DEFICIENCY (MILLIONS)	COMMENTS
FGMSD 76-91	Millions of Dollars of Costs Incurred in Training FMS Not Recovered	$43.0	$18.7	
77-AR-12	Underrecoupment FMS Training	21.5	-0-	
77-AR-14	Underrecoupment FMS Training	40.0	-0-	
AR-5-11	AF Did Not Charge Replacement Price	9.0	-0-	
FGMSD 77-17	Defense Action to Reduce Charges for Training Will Result in Loss of Millions	40.0	4.7	
FGMSD 77-20	Charges for Using Government-Owned Plant and Equipment	107.0	1.0	
73-AR-17	Improper Price on Repair and Returned Equipment	32.8	-0-	
78-AR-22	Improper Military and Civilian Retirement Factors	11.6	-0-	
78-47	Inadequate Methods Used to Account for and Recover Personnel Cost	-0-	-0-	
FGMSD 78-51	The Dept of Defense Continues to Improperly Subsidize Foreign Military Sales	69.0	2.5	
78-48A	Cost Waivers Under FMS Program: More Attention and Control Needed	83.0	20.0	
FGMSD 78-60	Letter Report Repair and Replacement of Equipment	60.0	-0-	
Unnumbered	Congressional Reductions FY 1978	210.0	-0-	

RECAP OF US GENERAL ACCOUNTING OFFICE REPORTS

REPORT NUMBER	TITLE	TOTAL DOLLAR DEFICIENCY (MILLIONS)	TOTAL ARMY DOLLAR DEFICIENCY (MILLIONS)	COMMENTS
79-AR-485	AF Allowances on Unserviceable Equipment	$46.2	$-0-	
79-AR-19	OMB Reduction FY 80 $75 Million, 1981-3, $150 Million each for Failure to Obtain Replacement Price on Secondary Items	525.0	-0-	
FGMSD 79-16	Improperly Subsidizing the Foreign Military Sales Program	370.0	.2	
80-AR-7	Failure to Recoup all Contract Quality Assurance Costs	32.0	-0-	
80-AR-13	Asset Use Charge on Inventory Items	17.9	-0-	
80-AR-16	Rent on Government-Owned Equipment	38.4	-0-	
FGMSD 79-31	Not Charging for Normal Inventory Losses	600.0	Not Identified	
FGMSD 76-64	Report of Review of Security Assistance Program in Iran	28.5	Not Identified	
LCD-77-210	Improvements Needed to Recover Transportation Costs	95.0	13.6	Corrective Action taken, billings made, new procedure implemented 1 Jan 78 and 1 April 78.
ID 81-36	Appropriateness of Procedures for Leasing Defense Property to Foreign Governments	54.3	15.2	
AFMD 81-61	Action Needed to Improve Timeliness of Billings for Sales	498.0	498.0	
	TOTAL	$3,028.2	$573.9	

RECAP OF DEFENSE AUDIT SERVICE REPORTS

REPORT NUMBER	TITLE	TOTAL DOLLAR DEFICIENCY (MILLIONS)	TOTAL ARMY DOLLAR DEFICIENCY (MILLIONS)	COMMENTS
8 Mar 76 651	Report on the Review of Delinquent Foreign Accounts Receivable	$ -0-	$ -0-	
12 Apr 76 661	Review of Selected Aspects of FMS to Saudi Arabia	1.9	.3	
11 Aug 76 689	Summary Report on the Review of Foreign Military Sales and Related Customer Order Programs	299.0	169.0	
10 Dec 76 715	Review of Tuition Pricing for Training	-0-	-0-	
14 Nov 77 833	Report on the Review of Selected Aspects of Corps of Engineers Operations in Saudi Arabia	167.2	167.2	
22 Jun 78 914	Report on the Review of Selected Aspects of Pricing of Ammunition and Missiles for Security Assistance Programs	11.6	-0-	
6 Sep 78 946	Report on the Review of Administrations of Direct Procurements by Foreign Governments	-0-	-0-	
6 Feb 79 79-047	Report on the Review of DOD Informational Program for Foreign Military Trainees	-0-	-0-	
8 Jan 79 79-035	Interservice Audit of Government-Furnished Materiels	2.0	1.3	
13 Feb 79 79-049	Report on the Review of Collection of Administrative Fees by the Security Assistance Accounting Center	-0-	-0-	

RECAP OF DEFENSE AUDIT SERVICE REPORTS

REPORT NUMBER	TITLE	TOTAL DOLLAR DEFICIENCY (MILLIONS)	TOTAL ARMY DOLLAR DEFICIENCY (MILLIONS)	COMMENTS
28 Feb 79 79-053	Report on the Review of Accounting Procedures and Document Controls at the Security Assistance Accounting Center	$ -0-	$ -0-	
22 Mar 79 79-063	Report on the Review of DOD Management Information Systems for Foreign Military Training	-0-	-0-	
29 May 79 79-095	Report on the Review of Fund Controls and Delivery Reporting for Foreign Military Sales	.5	.5	
12 Jul 79 79-112	Report on the Review of Pricing of Dedicated Training Programs for Foreign Students	1.9	1.4	
20 Jul 79 79-116	Audit of Contract Administration Major Contracts in Iran	-0-	-0-	
13 Dec 79 80-040	Report on the Review of FMS Administrative Budgets at Selected Army Materiel Readiness Commands	-0-	-0-	
24 Jan 80 80-054	Review of Reimbursement to DOD for Support of Korea	.3	.3	
3 Jun 80 80-112	Report on the Review of FMS Transportation Costs	27.9	-0-	
2 Sep 80 80-129	Review of FMS Cose Management	60.7	24.0	
24 Sep 80 80-139	Interim Report on the Review of the Test on Centralized Acctg and Disbursing of FMS Direct Cite Procurement	-0-	-0-	

RECAP OF DEFENSE AUDIT SERVICE REPORTS

REPORT NUMBER	TITLE	TOTAL DOLLAR DEFICIENCY (MILLIONS)	TOTAL ARMY DOLLAR DEFICIENCY (MILLIONS)	COMMENTS
17 Oct 80 81-009	Report on the Review of FMS Sales Supply Performance by the Navy	$ -0-	$ -0-	
3 Nov 80 81-013	Report on the Review of Overhaul and Repair for Foreign Military Sales	3.3	3.3	
22 Dec 80 Draft OFA-82 81-089-21Apr 81	Review of FMS Supply Performance	2506.4	200.4	
	TOTAL	$3082.7	$567.7	

RECAP OF US ARMY AUDIT AGENCY REPORTS

REPORT NUMBER	TITLE	TOTAL DOLLAR DEFICIENCY (MILLIONS)	TOTAL ARMY DOLLAR DEFICIENCY (MILLIONS)
28 Nov 75 MW 76-404	Audit of AMC Customer Order Program	$ -0-	$ -0-
28 Nov 75 SO 76-406	US Army Matl Cmd Customer Order Program	315.8	315.8
27 Jul 79 NE 79-211	Interfund Billing System	1.3	1.3
2 Nov 79 NE 80-2	Reimb. for FMS Maintenance Support	.4	.4
30 Oct 79 NE 80-3	Reimb. for FMS Maintenance Support	1.6	1.6
10 Jun 80 MW 80-207	Recoupment of Non-Recurring Research Development	1.0	1.0
9 Sep 80 SO 80-211	Recoupment of Non-Recurring RD & P Costs	16.4	16.4
29 Nov 79 EC 80-700	Foreign Student Tuition Pricing	-0-	-0-
8 Jan 81 HQ 81-203	Recoupment of Non-Recurring RD & P Costs	53.9	53.9
23 Feb 81 NE 81-205	Recoupment of Non-Recurring RD & P Costs	7.6	7.6
	TOTAL	$398.0	$398.0

RECOMMENDATIONS

BY GAO

1. RECOVER UNDERCHARGES ON TUITION RATES.
2. REVERSE METHOD OF CHARGING REPLACEMENT COSTS.
3. UNIFORM PROCEDURES FOR INVENTORY LOSSES.
4. RECOVER UNDERCHARGES FROM NONRECOVERY OF QUALITY CONTROL COSTS.
5. MODIFY PROCEDURES AND BILL CUSTOMERS FOR ACTUAL TRANSPORTATION COSTS.
6. ESTABLISH AND ENFORCE THROUGH MANAGEMENT EMPHASIS ON TIMELY BILLINGS.
7. ARMY DEVISE/IMPLEMENT SYSTEM OF DIRECT CHARGING TRUST FUND.
8. ESTABLISH PROCEDURES ON MONITORING OF LEASES.

RECOMMENDATIONS

BY DAS

1. IMPROVE CASE CLOSURES/FINAL BILLING.
2. PROCEDURES TO ENSURE THAT GFM IS IDENTIFIED AND BILLED.
3. PROCEDURES FOR DELINQUENT DEPOT MATERIEL RELEASE ORDER.
4. BILLING TIMELINESS AFTER CASE CLOSURES.
5. NONRECURRING COST RECOVERY.
6. FMS CASES: REPAIR INCLUDE APPROPRIATE CHARGES, EQUITABLE ALLOCATION OF COSTS.
7. USE REPLACEMENT COSTS IN DETERMINING SELLING PRICE OF ITEMS
8. DELIVERY REPORTING.
9. MONITORING OF PAYMENT SCHEDULES.
10. CHECKLIST TO ENSURE THAT ADD-ON COSTS ARE IN PRICES.

RECOMMENDATIONS

BY AAA

1. ESTABLISH CONTROLS OVER PROGRESS PAYMENTS.
2. MAKE RETROACTIVE ADJUSTMENTS TO BILLINGS.
3. REQUIRE IN-DEPTH REVIEW OF COST AND QUANTITATIVE DATA BEFORE ESTABLISHMENT OF SURCHARGE RATES.
4. REVISE SURCHARGE RATES.
5. RECOMPUTE PRICING DATA.
6. REQUEST REIMBURSEMENT OF NONRECURRING COSTS.
7. DEVELOP PROCEDURES FOR PRICING, BILLING, ACCOUNTING FOR AND REPORTING NONRECURRING COSTS.
8. FORMAL WRITTEN PROCEDURES FOR EQUIPMENT IDENTIFICATION FOR RECOUPMENT.
9. PERFORM ECONOMIC ANALYSIS AND ADJUST THE $5 MILLION THRESHOLD.

CONTINUED

10. OBTAIN EXPORT LICENSE.

11. INITIATE ACTION TO CHANGE AUTOMATED BILLING PROCEDURES FOR ARMY STOCK FUND ITEMS TO INCLUDE SURCHARGE RATES.

12. REVISE AR 37-60.

13. ESTABLISH TRAINING/INFORMATION PROGRAM TO MAKE SURE PERSONNEL ARE AWARE OF RESPONSIBILITIES IN TAKING ACTIONS.

14. DETERMINE FEASIBILITY OF ESTABLISHING MANAGEMENT OF CUSTOMER ORDER PROGRAM (ACOCS NOW).

APPENDIX D

OTHER ANALYSES OF SAAC AND DSAA

FILE DATA

1. Other Analyses. The analyses in this section were performed to determine if some case or case line parameter could give an indication of the acceptability of the initial estimate. The parameters investigated included the MSC executing the case, the customer country, the year in which the case was initiated and completed, the unit cost of the case line item, the value of the case line, the duration of the case, and the security classification of the case.

a. By Major Subordinate Command:

(1) The first four digits of the National Stock Number (NSN) for an item of equipment is the Federal Supply Classification (FSC) Code. Army Regulation 708-1 (Ref 11) identifies a Primary Inventory Control Activity (PICA) with each FSC and, in turn, a major subordinate command with each PICA. These relationships were used to approximate MSC pricing performance because neither the DSAA nor SAAC data directly referenced the responsible subordinate command for the item or case. This analysis was performed to determine if there is a perceptible difference between the ratios for the various MSCs as represented by the FSC-PICA-MSC relationship. The PICA code and MSC counterparts are as follows:

AZ	TACOM	USA Tank-Automotive Command
BD	MICOM	USA Missile Command
BF	ARRCOM	USA Armament Materiel Readiness Command
CL	CECOM	USA Communications-Electronics Command
CT	TSARCOM	USA Troop Support and Aviation Materiel Readiness Command
CD	GMPA	USA General Materiel and Petroleum Activity

(2) DSAA Data: The file of cases containing major items was reduced to 594 records by removing 11 records with FSC that could not be identified with an MSC. Table D1 below shows the results of analyzing this file. The first column identifies the MSC through the PICA and FSC. The second column shows the number of different FSCs that comprised the case line sample for the MSC. The third column represents the percent of cases that were identified with that MSC. The fourth column is the weighted ratio of the summed final to the summed initial case values and the last column shows the standard deviation of the weighted ratio.

TABLE D1. DSAA RATIOS AND SALES BY MSC

MSC	FSCs	PERCENT OF CASES	WEIGHTED RATIO	STANDARD DEVIATION
TACOM	4	11.28	95.50%	5.1954
MICOM	11	4.71	76.81%	11.9337
ARRCOM	26	63.97	93.43%	2.3382
GMPA	17	7.74	85.66%	8.7669
CECOM	16	8.75	70.66%	9.5843
TSARCOM	8	3.54	98.62%	0.9538
Total Cases		594		

The distribution of ratios for each MSC may be seen in Table D2.

TABLE D2. DSAA DATA DISTRIBUTION OF RATIOS BY MSC

RATIO (%) RANGE	PERCENT OF RATIOS WITHIN RANGES BY MSC					
	TACOM	MICOM	ARRCOM	GMPA	CECOM	TSARCOM
0 - 9.9			.3	4.3		
10 - 19.9			1.1	2.2	3.8	
20 - 29.9		3.6	1.3	4.3	1.9	
30 - 39.9	1.5	3.6	0.8	4.3	1.9	
40 - 49.9	1.5	3.6	1.6	6.5	3.8	
50 - 59.9	4.5		1.3	4.3	11.5	
60 - 69.9	1.5	10.7	3.4		3.8	
70 - 79.9	10.4	7.1	5.0	2.2	7.7	4.8
80 - 89.9	35.8	10.7	8.4	4.3	7.7	4.8
90 - 99.9	20.9	25.0	41.6	39.1	26.9	47.6
100 - 109.9	22.4	35.7	31.1	21.7	23.1	42.9
110 - 119.9			1.6	4.3	1.9	
120 - 129.9			1.8		1.9	
130 - 139.9			0.3			
140 - 149.9				2.2		
150 - 159.9			0.3			
160 - 169.9						
170 - 179.9					1.9	
180 - 189.9						
190 - 199.9	1.5					
283.77			0.3			
328.119					1.9	
Total Cases	67	28	380	46	52	21

(3) SAAC Data: As for the DSAA data, SAAC does not at present provide information with which the item can be linked to the responsible subordinate command. The same FSC-PICA-MSC relationship was used to approximate MSC performance. FSCs for five case lines could not be identified and were not included. The results of the analysis may be seen in Table D3.

TABLE D3. SAAC RATIOS AND SALES BY MSC

MSC	FSCs	PERCENT OF CASE LINES	WEIGHTED RATIO	STANDARD DEVIATION
TACOM	4	17.18	96.07%	3.0125
MICOM	10	4.65	98.32%	5.1003
ARRCOM	23	26.48	93.64%	4.5580
GMPA	14	18.95	82.08%	11.0024
CECOM	15	31.41	100.30%	3.5714
TSARCOM	5	1.83	100.11%	16.9149
Total Case Lines 710				

This Table can be interpreted the same as Table D1. The MSC ratios in Tables D1 and D3 are different for the same MSC. This is attributable to the different cases in the two data bases. The distribution of individual ratios for each MSC may be seen in Table D4.

b. By Country:

(1) DSAA Data: The tabulation in Table D5 was made to determine if any conclusions could be drawn from the weighted ratio of combined cases for a country. In order, the information provided is country code (see the Military Assistance and Sales Manual [MASM])(Ref 3), number of cases in the file for that country, the ratio of the summed final case costs to the summed initial case costs. Note that this data is by total case value and only for those cases that contain major items.

TABLE D4. SAAC DATA DISTRIBUTION OF RATIOS BY MSC

RATIO (%) RANGE	PERCENT OF RATIOS WITHIN RANGES BY MSC					
	TACOM	MICOM	ARRCOM	GMPA	CECOM	TSARCOM
0 - 9.9	0.8		0.5	1.5		
10 - 19.9	0.8			6.9	0.4	
20 - 29.9		3.0	0.5	2.3	0.9	
30 - 39.9	0.8	3.0	0.5	3.1	0.9	
40 - 49.9		3.0	1.1	3.1	2.2	
50 - 59.9	0.8		1.1	2.3	2.2	
60 - 69.9	1.6	3.0	1.6	3.8	5.4	
70 - 79.9	3.3	12.1	8.0	1.5	4.0	
80 - 89.9	13.1	18.2	5.9	6.1	5.8	
90 - 99.9	23.8	6.1	23.9	27.5	26.9	15.4
100 - 109.9	48.4	48.5	44.1	25.2	35.9	61.5
110 - 119.9	1.6		3.2	0.8	3.1	
120 - 129.9	0.8		3.2		3.6	
130 - 139.9	0.8		2.1	1.5	2.2	
140 - 149.9	0.8		1.1	1.5	1.8	7.7
150 - 159.9	0.8	3.0			0.4	
160 - 169.9				0.8	1.3	
170 - 179.9			0.5	0.8		
180 - 189.9			1.1	5.3		
190 - 199.9			0.5	0.8		7.7
Over 200	1.6		1.1	5.3	2.7	7.7
Total Case Lines	122	33	188	131	223	13

(2) SAAC Data: An identical analysis was performed on this data. The ratios in the table are derived from case line values, without add-on charges. See Table D5.

(3) The DSAA and SAAC ratios are not comparable since different cases were represented by the different sets of data.

TABLE D5. SAAC AND DSAA RATIOS BY COUNTRY CODE

COUNTRY	SAAC		DSAA	
	CASE LINES	RATIO	CASES	RATIO
AR	12	72.00	17	93.72
AT	5	97.39	29	88.10
AU	7	91.60	5	85.97
BA			1	98.77
BE	3	82.92	7	99.03
BL			3	109.65
BM			3	100.00
BR	5	94.87	5	99.67
BX			1	99.99
CN	9	99.85	18	89.04
CO	2	97.24	4	94.23
CS			2	84.58
CX	23	95.92	4	71.12
DE	4	99.07	13	101.75
EC	7	109.95	11	95.33
EG			1	92.21
EI	1	100.00		
ES	8	94.86	4	105.87
FR	1	127.71		
GB			1	100.00
GR	15	98.65	48	91.18
GT	5	93.30	12	87.45
GY	4	92.09	10	91.12
HA			1	100.00
HO	3	100.00	9	86.86
ID	2	78.36	1	96.63
IN			1	90.46
IR	119	93.26	30	50.06
IS	86	98.54	32	94.61
IT	9	46.00	7	60.82
JA	7	98.95	4	97.69
JO	30	99.74	10	79.47
K6	1	32.14	1	32.38
KS	46	80.53	74	97.55
KU	5	102.46	1	102.19
LE	8	71.91	2	99.78
LI			5	72.80
LX	4	105.12		
MF			1	94.14
MO	15	102.78	1	88.11
MU	1	74.14	1	99.43
N4	3	65.99	10	48.94

(continued)

TABLE D5. SACC AND DSAA RATIOS BY COUNTRY CODE (continued)

COUNTRY	SAAC		DSAA	
	CASE LINES	RATIO	CASES	RATIO
NE	4	82.10	14	78.28
NO	5	100.00	6	99.92
NU			2	93.57
NZ			11	96.34
PA			1	88.48
PE	11	87.02		
PI	2	109.58	12	86.34
PK	2	94.64	5	95.57
PN			8	92.11
PT	3	94.86	3	90.27
SI	20	100.54		
SN	4	100.73	14	98.20
SP	41	95.44	13	89.07
SR	17	87.66	6	104.49
SU	2	87.54	3	54.20
SW	1	100.00	4	67.17
SZ	14	103.29	6	78.21
TC			1	114.55
TH	28	93.66	45	93.86
TK	4	102.29	5	98.88
TU			4	99.73
TW	68	101.84	28	98.71
UK	1	100.00	16	95.78
VE	38	106.94	2	94.36
YE			5	92.77
YU			1	100.71
Total	715		605	

(4) There are no perceptible relationships between country and ratio.

c. By Case Initiation Date:

(1) DSAA Data: An analysis was made of the case initiation year and the weighted ratio for all cases in the data file that contained major items and were initiated in that year. The

results are shown below in Table D6. The first column shows the case initiation year, the second column shows the percent of cases in the sample that were initiated in the year in the first column, the third column shows the weighted ratio and the last column the standard deviation of the weighted ratio.

TABLE D6. DSAA RATIOS BY YEAR IN WHICH CASE INITIATED

YEAR	PERCENT OF CASES	WEIGHTED RATIO	STANDARD DEVIATION
1972	0.16	95.29	
1973	NONE		
1974	NONE		
1975	0.16	100.00	
1976	21.98	97.59	5.3063
1977	37.69	89.80	3.7921
1978	15.04	94.05	2.9557
1979	13.55	91.42	2.0459
1980	8.60	96.56	6.6432
1981	2.81	98.31	5.8410

The ratios for the case initiation years are too irregular to draw any conclusions from this analysis, though the ratio improved in the three most recent years of data.

(2) SAAC Data: An identical analysis was performed on the SAAC data. See Table D7.

TABLE D7. SAAC RATIOS BY YEAR IN WHICH CASE LINE INTIATED

YEAR	PERCENT OF CASE LINES	WEIGHTED RATIO	STANDARD DEVIATION
1970	0.56	99.29%	40.8764
1971	5.03	97.82%	26.3348
1972	12.17	101.29%	1.0786
1973	12.59	96.69%	4.8650
1974	15.66	99.04%	6.0955
1975	17.62	95.29%	3.7234
1976	9.09	88.36%	1.5351
1977	10.63	83.54%	4.7125
1978	2.94	90.33%	8.5841
1979	4.90	92.15%	1.6052
1980	5.17	99.39%	13.7328
1981	3.64	100.25%	13.8518

Note that the ratios have increased for the last five years through 1981.

d. By Case Closure Date:

(1) DSAA Data: An analysis was made of the cases with major items to determine if there was a relationship between closure year and weighted ratio. The year that the case was closed out was used to establish a ratio for each year. The results of this analysis are shown in Table D8.

TABLE D8. DSAA RATIOS FOR YEAR IN WHICH CASE CLOSED

YEAR	PERCENT OF CASES	WEIGHTED RATIO	STANDARD DEVIATION
1977	0.17	100.00	-
1978	5.62	100.00	0.0052
1979	19.34	95.29	4.6934
1980	19.83	89.92	2.9612
1981	29.42	94.17	5.0284
1982	25.62	93.25	3.4009

There is no apparent relationship between closure year and ratio.

(2) SAAC Data: A similar analysis was made of the SAAC data. The results are tabulated below in Table D9.

TABLE D9. SAAC RATIOS FOR YEAR IN WHICH CASE LINE CLOSED

YEAR	PERCENT OF CASES LINES	WEIGHTED RATIO	STANDARD DEVIATION
1980	1.26	81.72	35.4030
1981	15.10	100.26	2.0561
1982	83.64	96.05	2.9000

No new conclusions can be drawn from the results.

e. By Unit Cost:

SAAC Data: Ranges of case line unit costs were analyzed to determine if a discernible pattern of cost versus ratio could be found. The results may be seen in Table D10. Dollar unit cost ranges, distribution of case lines, weighted ratio and standard deviation of weighted ratio are shown.

TABLE D10. SAAC UNIT COST DISTRIBUTION AND RATIOS

CASE LINE DOLLAR UNIT COST RANGE			PERCENT OF CASE LINES	WEIGHTED RATIO	STANDARD DEVIATION
.001	-	1.000	0.84	102.19	6.9275
1.001	-	10.000	2.38	85.41	12.3739
10.001	-	100.000	13.85	94.93	7.8831
100.001	-	1,000.000	35.80	97.81	3.3750
1,000.001	-	10,000.000	29.09	94.58	2.8575
10,000.001	-	100,000.000	15.10	96.35	3.4462
100,000.001	-	1,000,000.000	2.80	101.98	14.0558
1,000,000.001	-	10,000,000.000	0.14	100.14	-

No clear relationship exists between unit price and ratio.

f. By Case Line Cost:

SAAC Data: This analysis is similar to that in (e) above. The results may be seen in Table D11 below.

TABLE D11. SAAC CASE LINE COST DISTRIBUTION AND RATIOS

DOLLAR CASE LINE COST RANGE			PERCENT OF CASE LINES	WEIGHTED RATIO	STANDARD DEVIATION
.001	-	1.000	0.00	0.00	-
1.001	-	10.000	0.00	0.00	-
10.001	-	100.000	1.82	18.56	30.2306
100.001	-	1,000.000	13.99	59.48	12.5233
1,000.001	-	10,000.000	32.31	65.52	26.5294
10,000.001	-	100,000.000	25.59	91.57	5.8939
100,000.001	-	1,000,000.000	17.20	95.33	2.9129
1,000,000.001	-	10,000,000.000	7.13	95.73	1.5250
10,000,000.001	-	100,000,000.000	1.96	97.97	6.2658

The weighted ratios for case lines valued at over $10,000 show an upward trend suggesting that the estimates for higher valued lines are better than those for low valued lines.

g. By Time Span Between Case Initiation and Case Closure Date:

(1) DSAA Data: To determine if there was a perceptible relationship between the duration of a case and the resulting weighted ratio, the difference between the case closure year and the case initiation year (span) were computed. The weighted ratio was then computed for each span. The year spans ranged from 0 to 10 years with the majority of cases lasting 3 years or less. Two analyses were made and compared. First for the total file (including major items), then for the subset of that file that contained only major items. For both analyses, those cases where the initial or final case value was unavailable were excluded. The results may be seen in Table D12.

TABLE D12. DSAA RATIOS AS A FUNCTION OF YEARS BETWEEN CASE INITIATION AND CASE CLOSURE

CASE DURATION (YEARS)	MAJOR ITEMS			TOTAL FILE		
	PERCENT OF CASES	WEIGHTED RATIO	STANDARD DEVIATION	PERCENT OF CASES	WEIGHTED RATIO	STANDARD DEVIATION
0	0.17	101.73	-	0.35	92.27	6.8971
1	11.40	95.24	1.7369	14.50	84.42	5.7824
2	31.90	93.39	2.6955	33.27	56.19	25.0535
3	24.96	92.56	4.2063	28.19	76.47	5.2510
4	18.02	88.56	3.0353	15.43	71.47	5.9897
5	10.58	96.94	6.5880	6.95	70.67	9.3919
6	2.81	86.05	5.4196	1.44	77.79	6.5236
7	NONE	-	-		-	-
8	NONE	-	-		-	-
9	NONE	-	-		-	-
10	0.17	95.29	-	0.03	95.29	-
TOTAL CASES	605			3959		

In both analyses, over 70% of the cases were completed in 3 years or less and the shorter the duration, the better the ratio.

(2) SAAC Data: An identical analysis was made on SAAC major item data. The results may be seen in Table D13.

TABLE D13. SAAC RATIOS AS A FUNCTION OF YEARS BETWEEN CASE INITIATION AND CASE CLOSURE

CASE LINE DURATION	PERCENT OF CASE LINES	WEIGHTED RATIO	STANDARD DEVIATION
0	0.00	0	-
1	3.78	100.34	13.4712
2	5.03	99.19	13.9640
3	4.90	92.14	1.6052
4	3.36	89.56	6.1034
5	11.33	82.62	5.7331
6	14.83	95.72	3.3454
7	12.31	90.40	7.4097
8	16.78	99.37	6.0139
9	14.83	97.09	3.0203
10	7.27	105.41	5.0385
11	5.03	97.82	26.3348
12	0.56	99.29	40.8764
TOTAL CASE LINES	715		

No apparent conclusions can be drawn from this analysis.

h. Classified and Unclassified Data:

(1) In some FMS cases the type of materiel and quantity purchased are classified. DSAA data was used to determine if there was a perceptible difference between classified data and unclassified data price ratios. Classified data was excluded from data requests to insure that the final report would be unclassified and on the assumption that there is no price ratio dependence on the classification of the data. The classified cases represented 0.6% of the total file.

(2) The initial and final prices for 23 classified cases were examined. The case line items were a mixture of services, and major and secondary items. Total case prices were used. The weighted ratio for all 23 cases was 97.99%. The range of individual ratios was from 69.10% to 100.99% with a median individual ratio of 99.98%.

(3) The mean of the classified cases was compared to the mean for the total DSAA file. At the 10% significance level, using a t-distribution and two tailed test, the mean of the classified data was found to be significantly different from the mean of the total file suggesting that they do not come from the same population.

(4) This indicates that classified data should have been included with the unclassified data for completely accurate analyses. However, since classified cases comprised only 0.6% of the cases provided by DSAA, none of the analyses would show a significant change if classified cases would have been included.

END

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